

# **Field Quality of Magnets in the First Snake (HRD101)**

Animesh Jain, November 18, 1999

## **HRD101 Contains Four “Storage Units”:**

HSD101, HSD102, HSD201, HSD204 (aka HSD103)

## **Each “Storage Unit” cold tested before installation in HRD101**

Measurement of Integral Dipole Field at several currents using a 3.57 m long rotating coil.

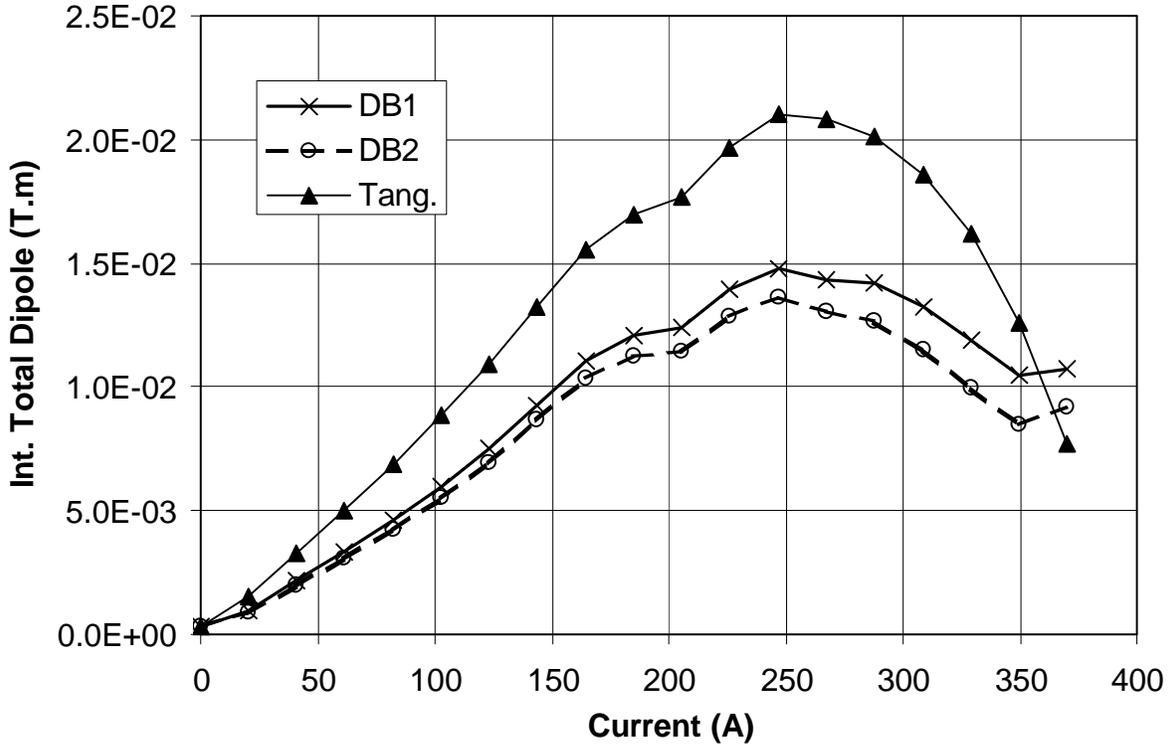
Measurement of harmonics as a function of current using a 2 in. long rotating coil, at one axial position in the center of the magnet.

Measurement of harmonics as a function of axial position at three different currents: 102 A (1.37 T), 267 A (3.47 T) and 329 A(4.11 T).

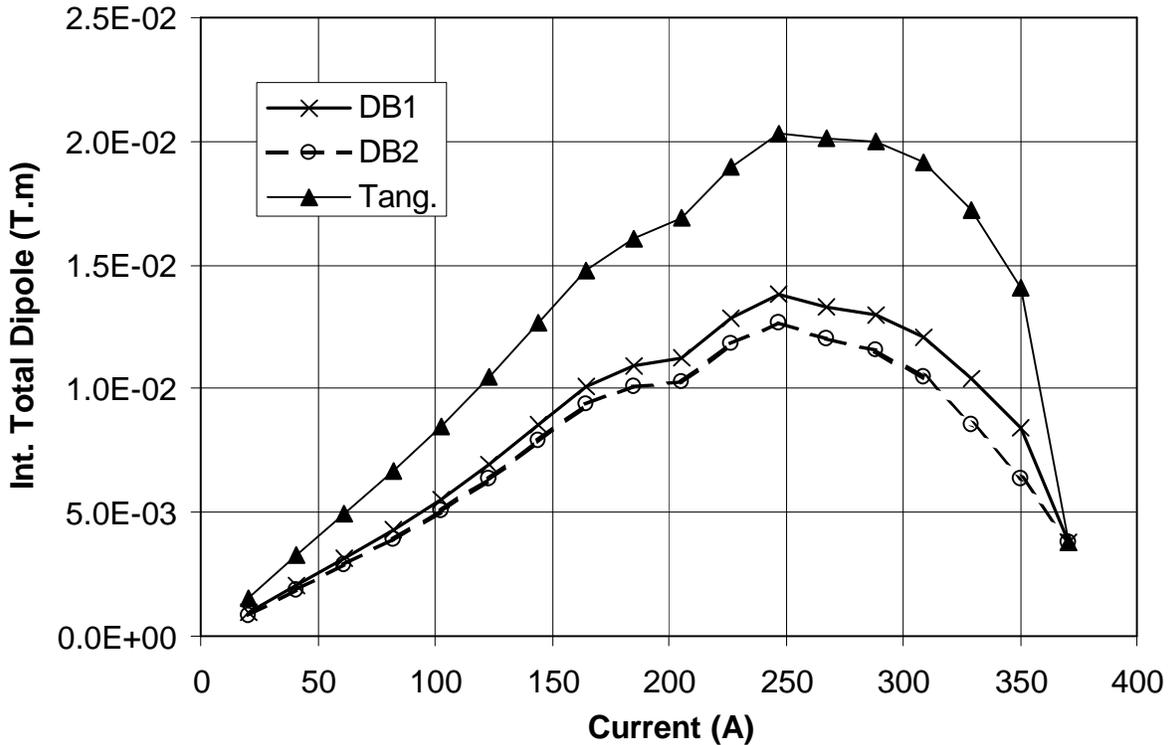
Every storage unit may not have all types of data available due to equipment failures and/or test time constraints.

**No magnetic measurements of any kind are done on the completed assembly.**

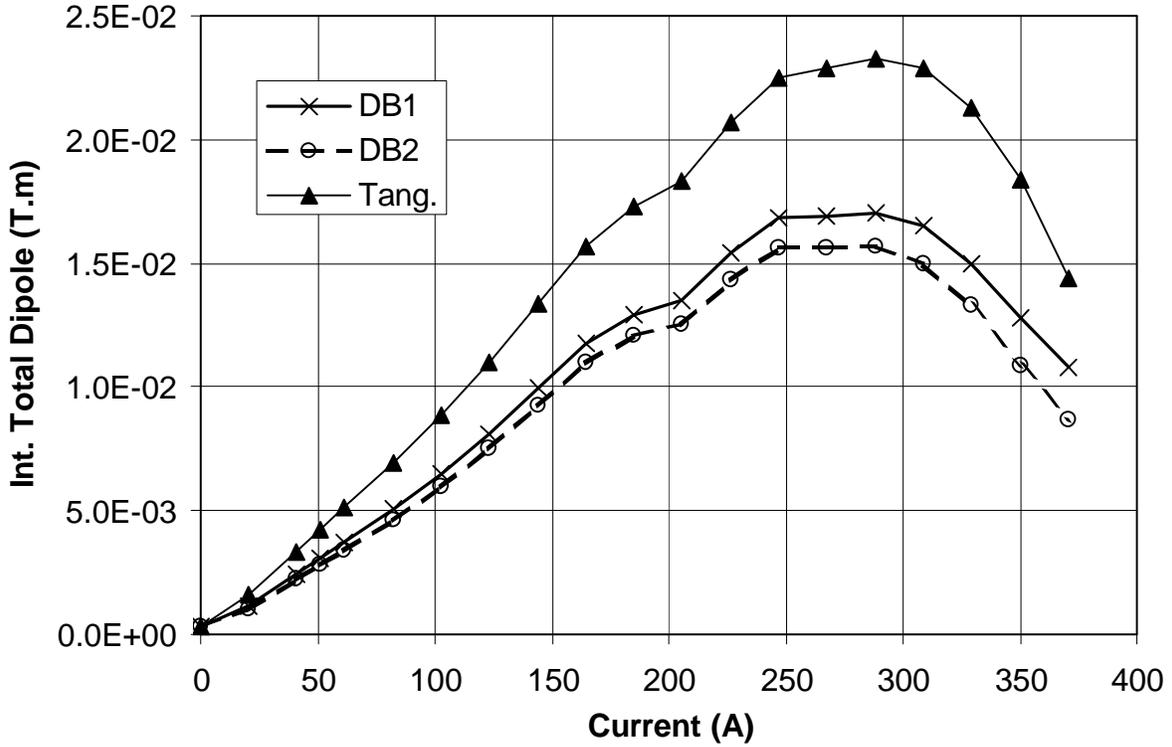
### HSD101 Integral Dipole Field (Total Amplitude, Up ramp)



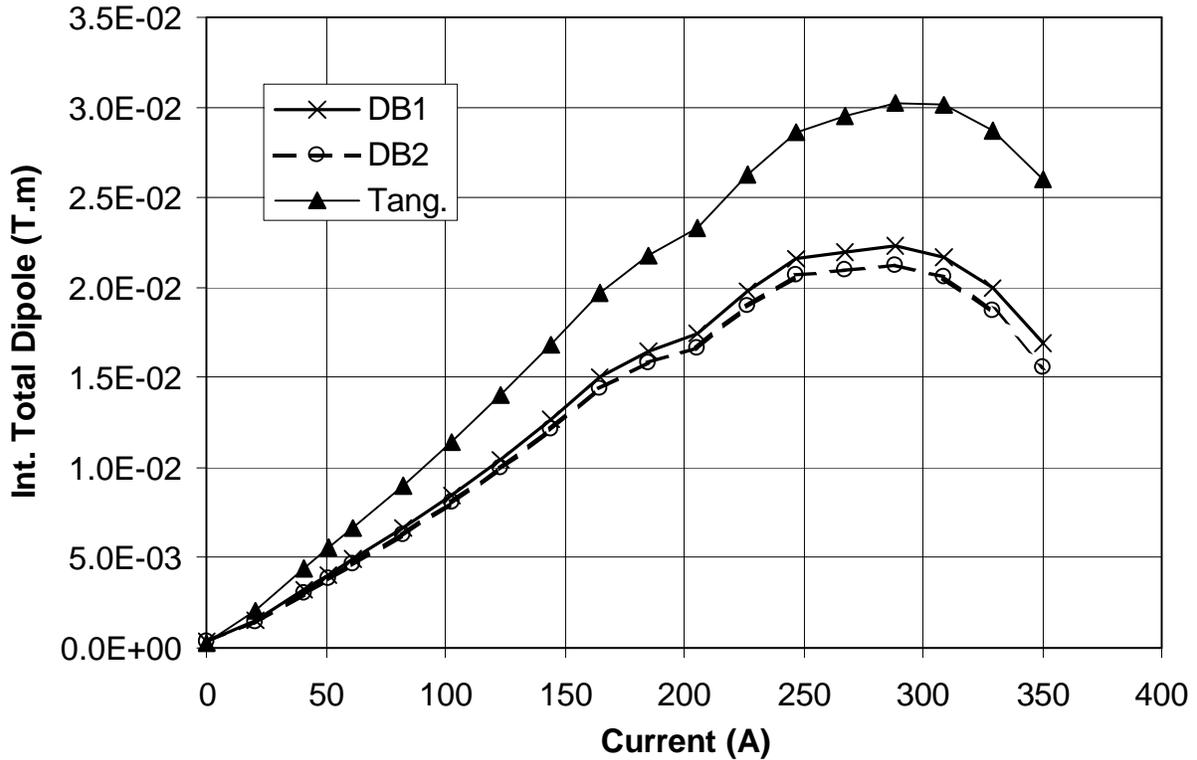
### HSD201 Integral Dipole Field (Total Amplitude, Up ramp)



### HSD102 Integral Dipole Field (Total Amplitude, Up ramp)

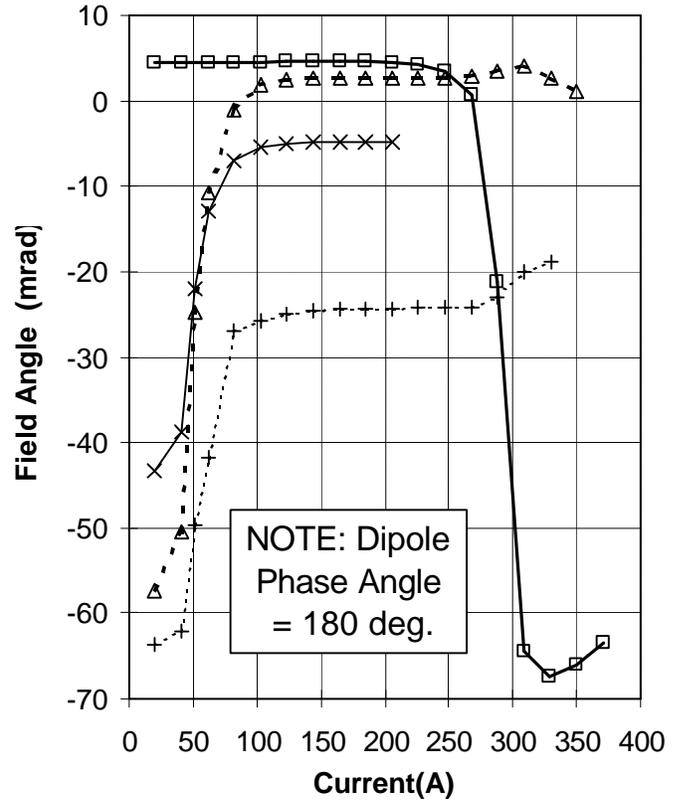
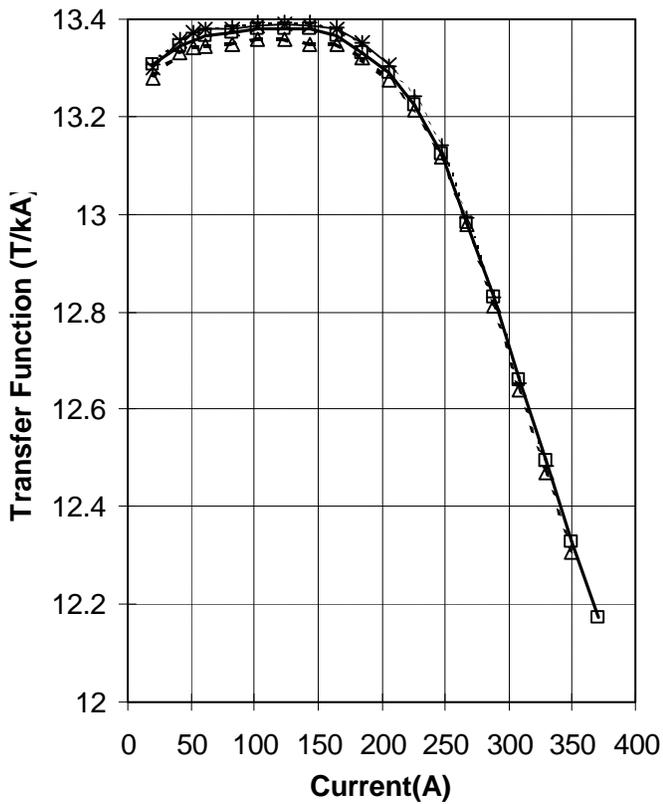
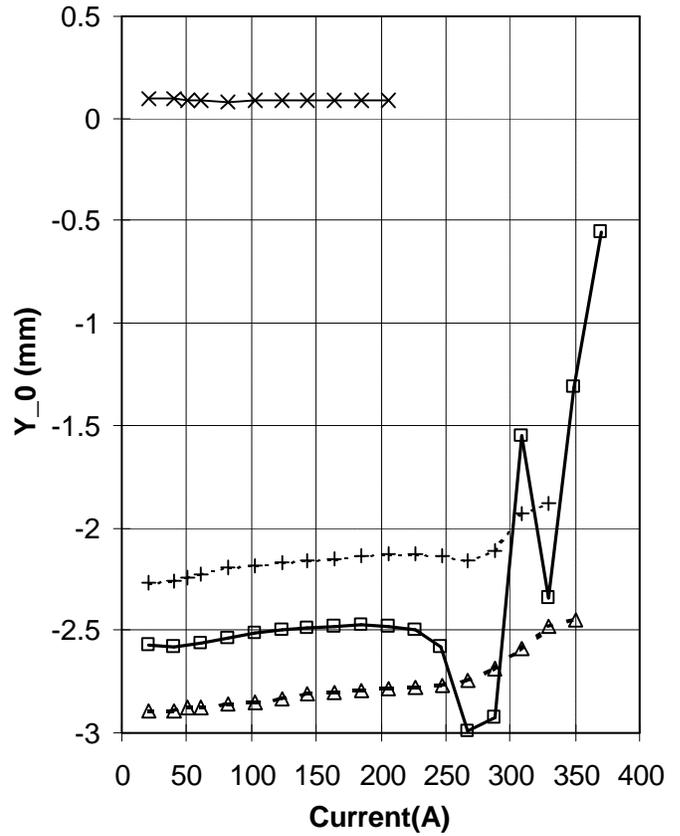
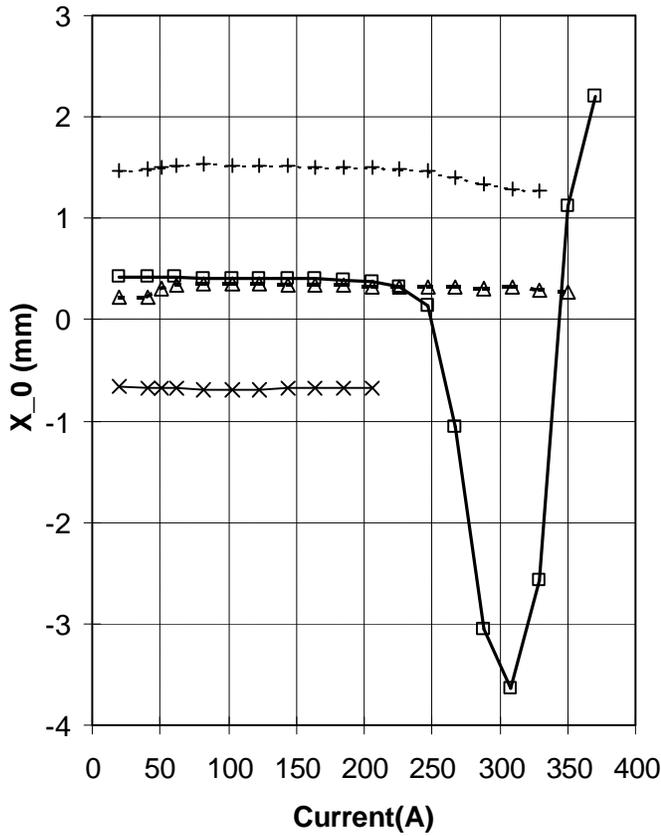


### HSD103 (aka HSD204) Integral Dipole Field (Up Ramp)



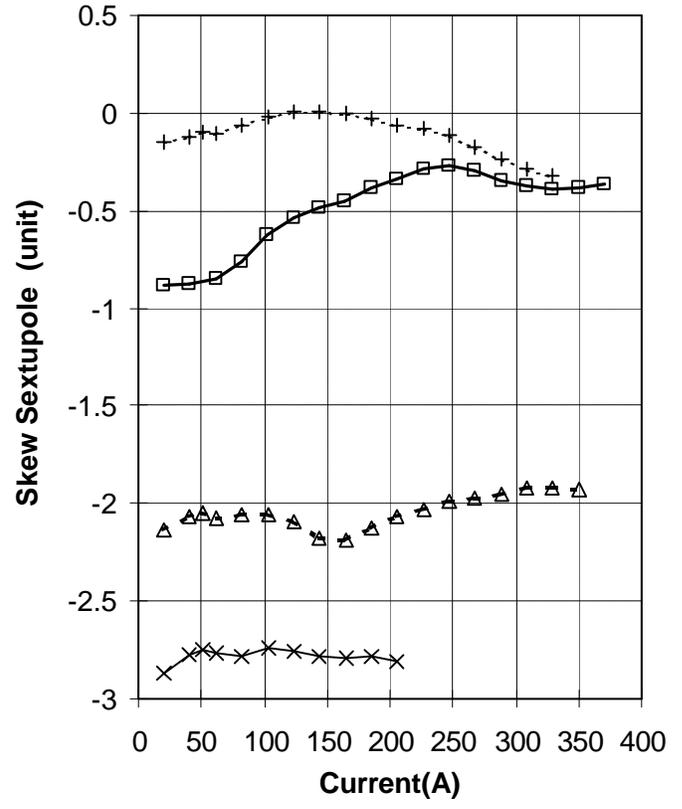
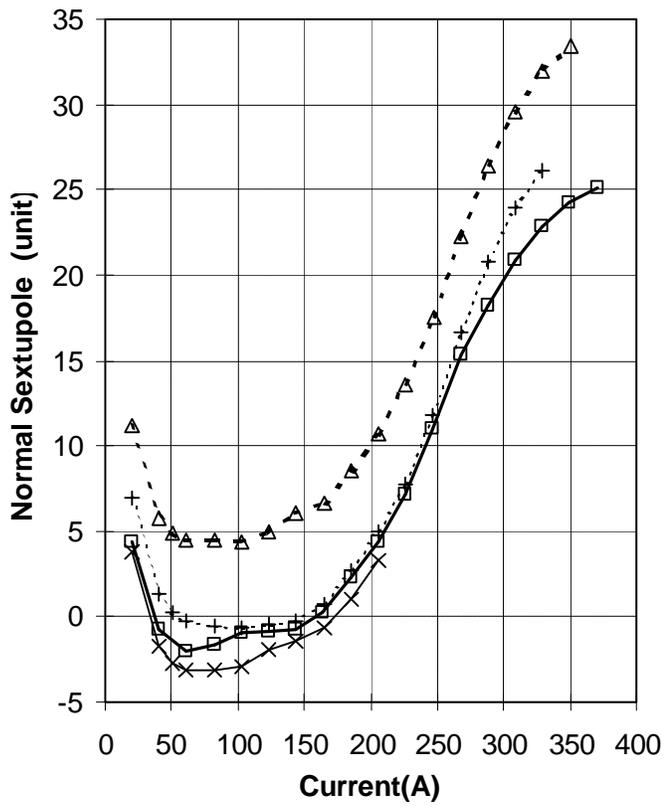
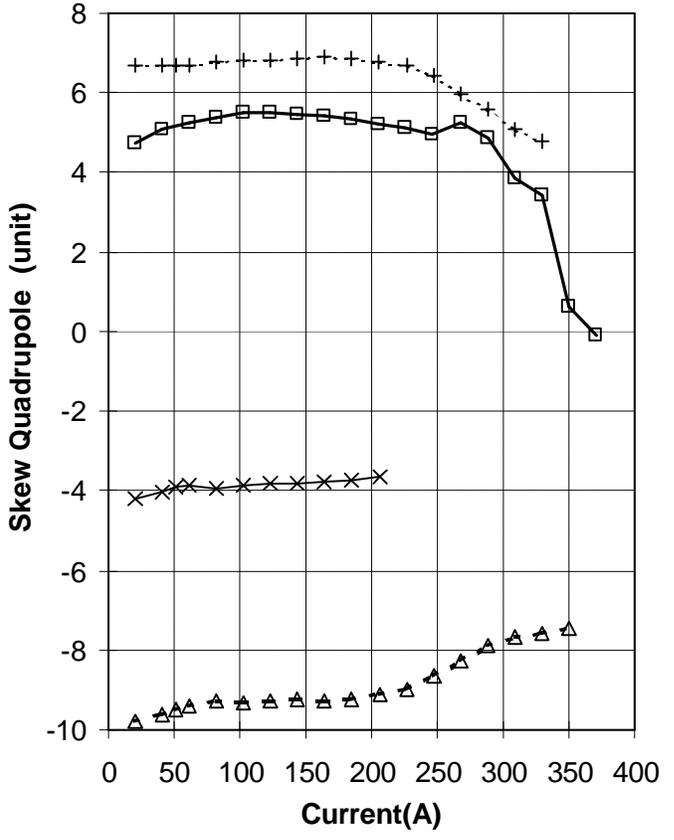
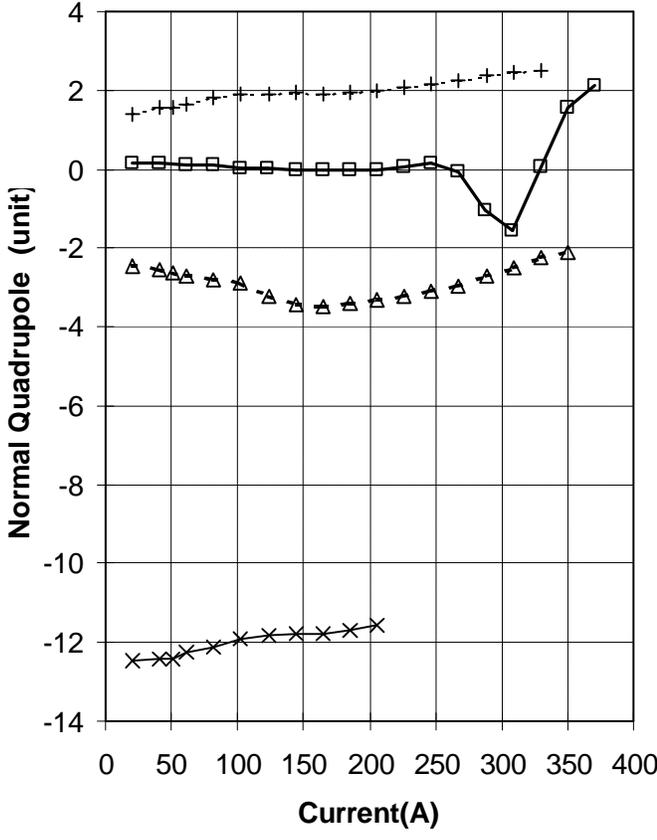
—□— HSD10153.101 UP RAMP; CENTER  
 - - Δ - - HSD10327.101 UP RAMP; CENTER

—×— HSD10241.101 UP RAMP; CENTER  
 ...+... HSD20129.102 UP RAMP; CENTER



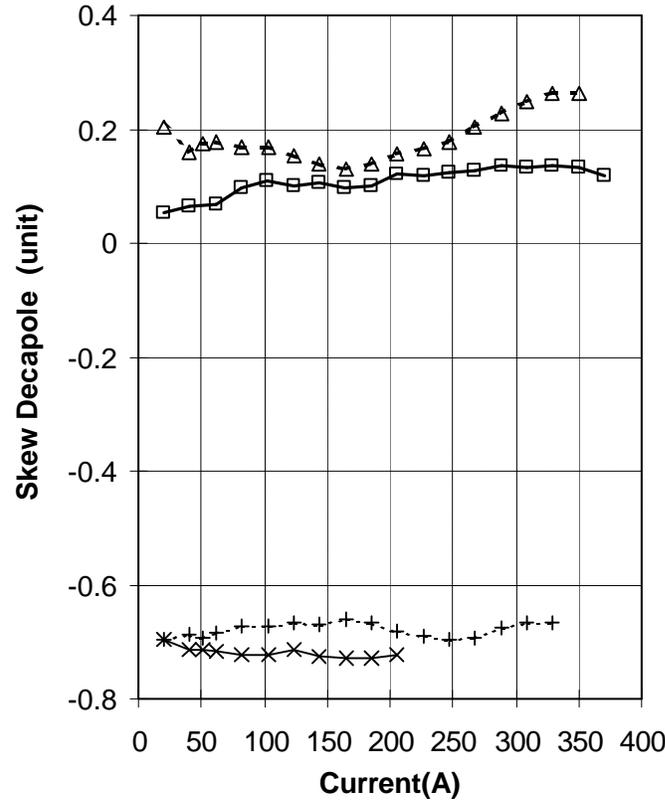
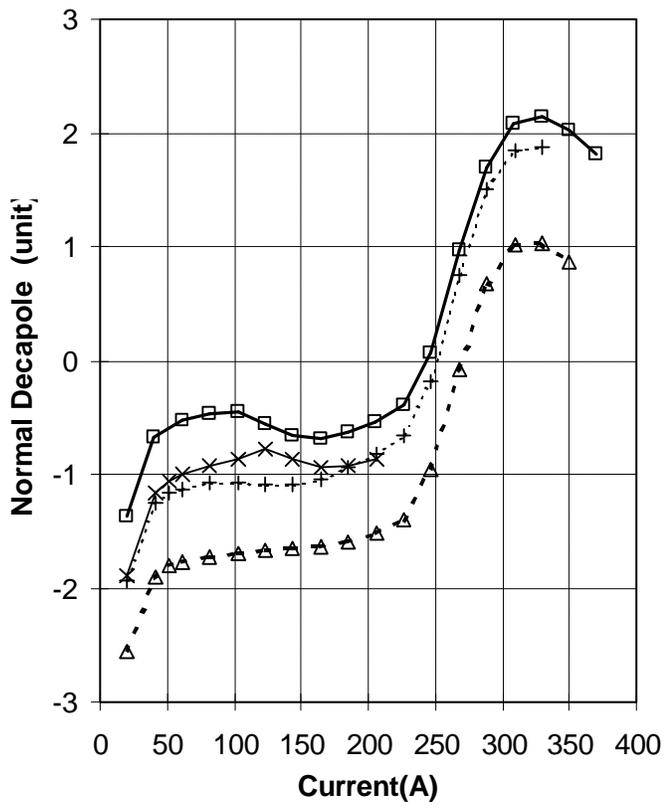
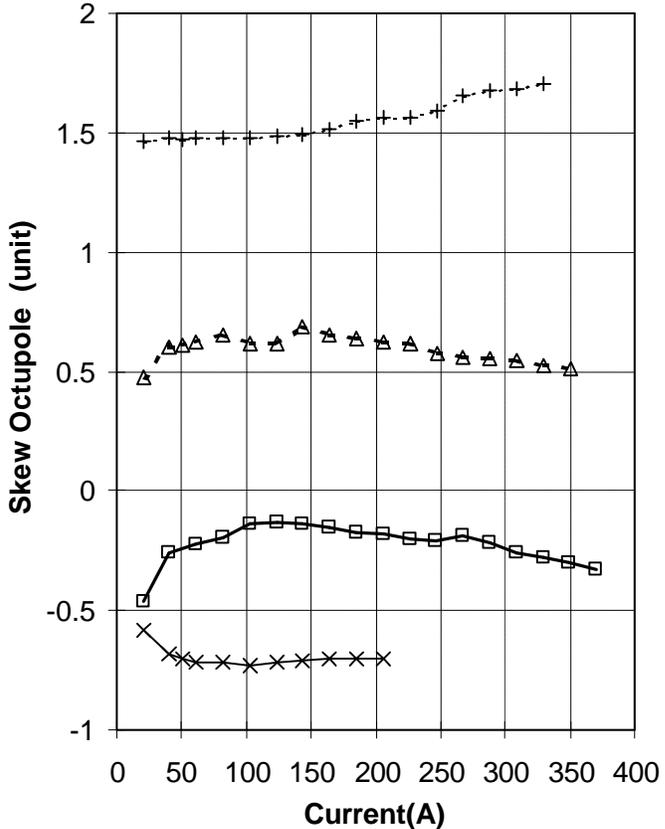
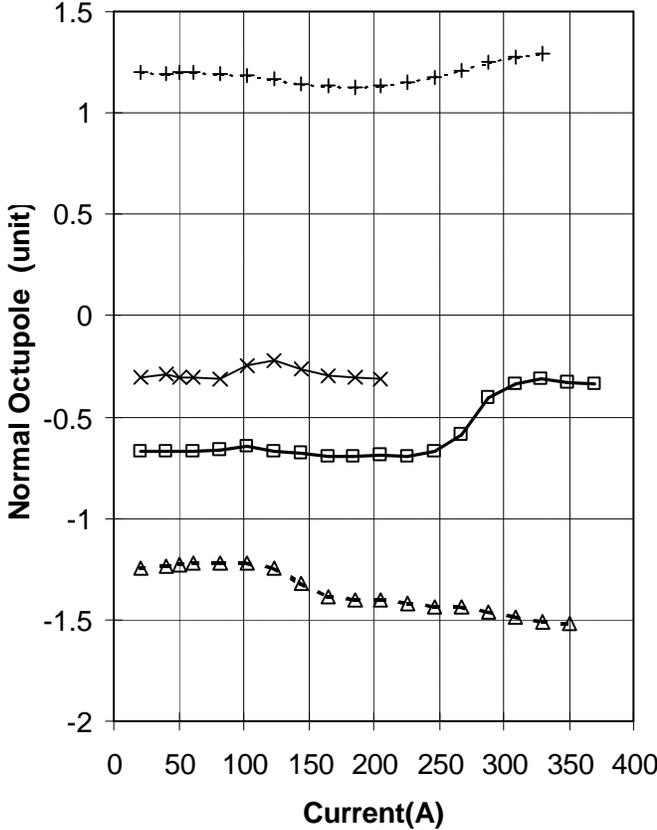
—□— HSD10153.101 UP RAMP; CENTER  
 - - Δ - - HSD10327.101 UP RAMP; CENTER

—×— HSD10241.101 UP RAMP; CENTER  
 - - + - - HSD20129.102 UP RAMP; CENTER



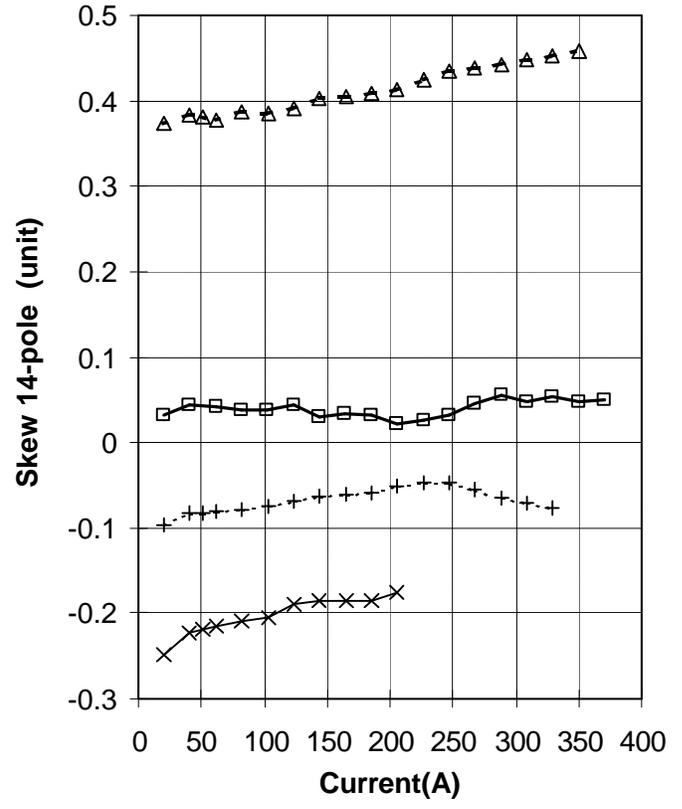
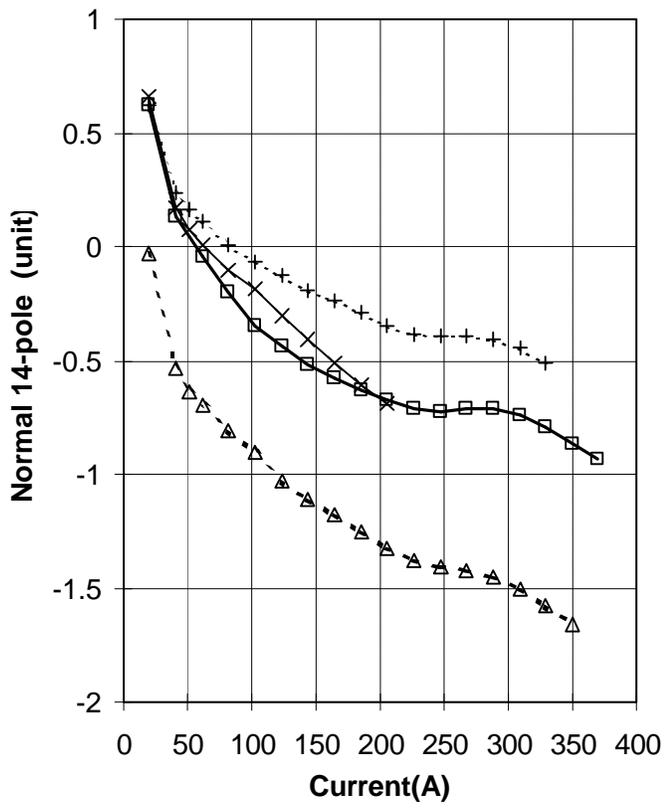
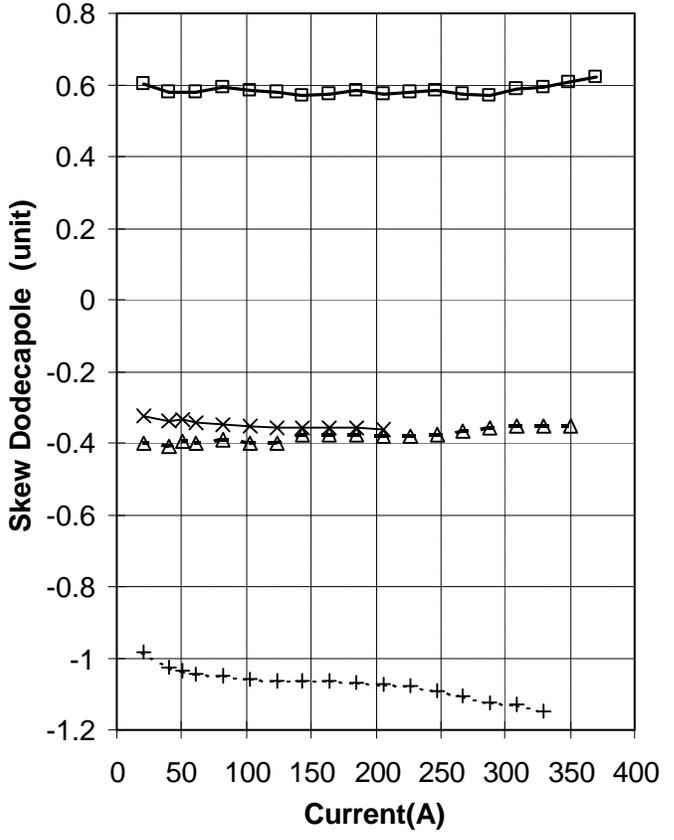
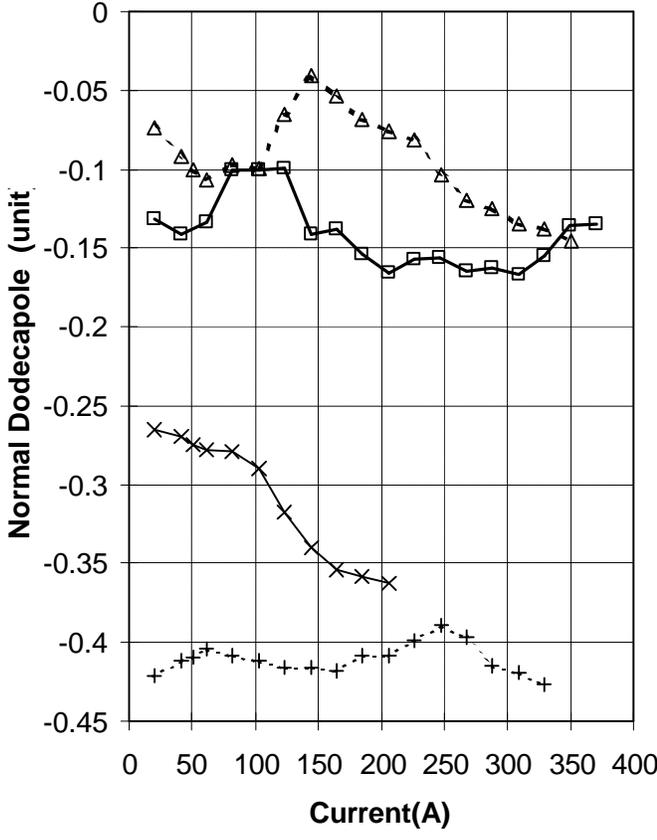
—□— HSD10153.101 UP RAMP; CENTER  
 - - Δ - - HSD10327.101 UP RAMP; CENTER

—×— HSD10241.101 UP RAMP; CENTER  
 ...+... HSD20129.102 UP RAMP; CENTER



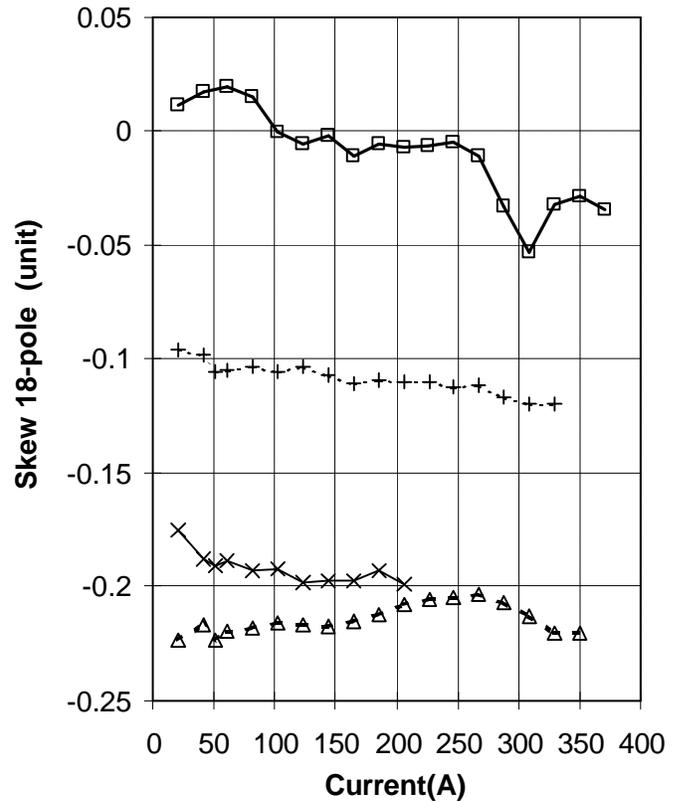
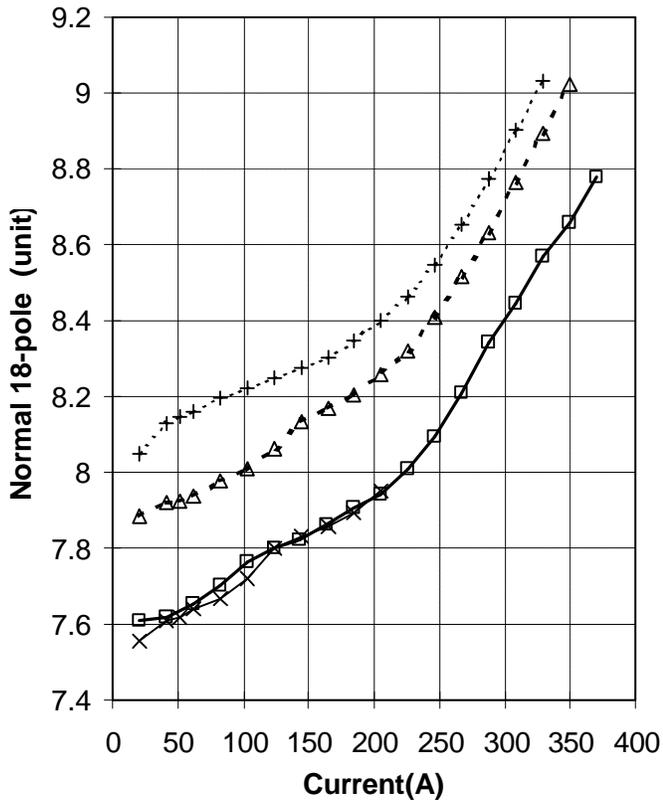
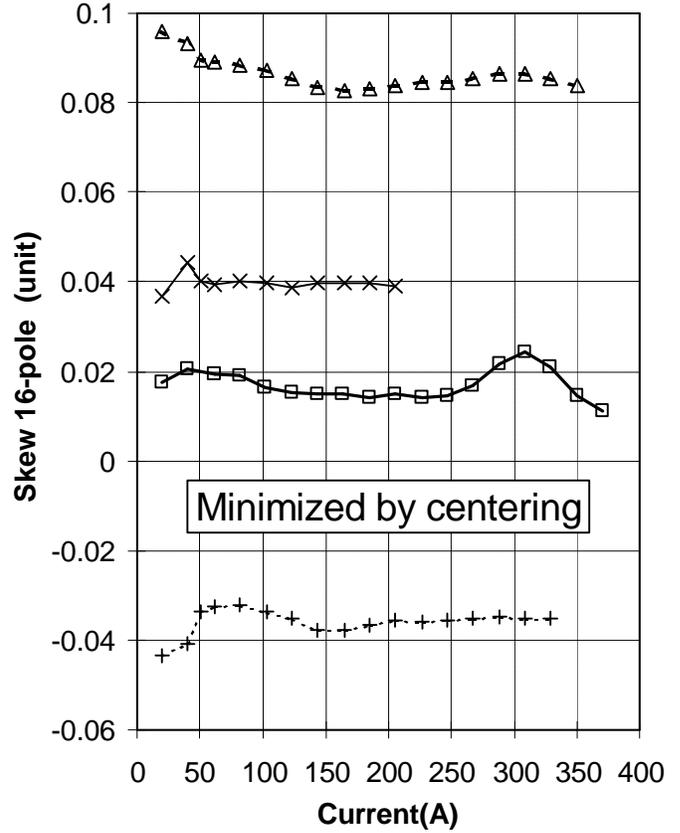
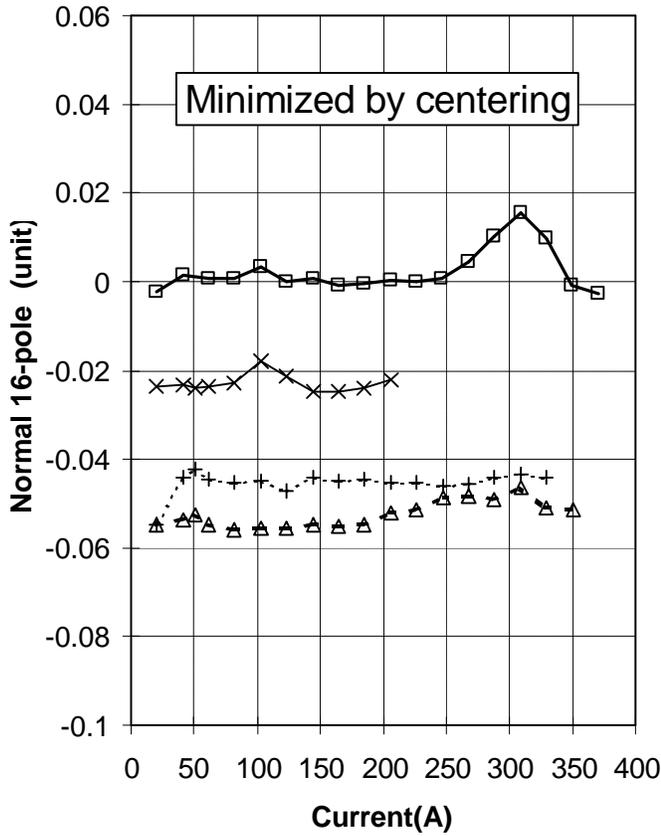
—□— HSD10153.101 UP RAMP; CENTER  
 - - Δ - - HSD10327.101 UP RAMP; CENTER

—×— HSD10241.101 UP RAMP; CENTER  
 ...+... HSD20129.102 UP RAMP; CENTER



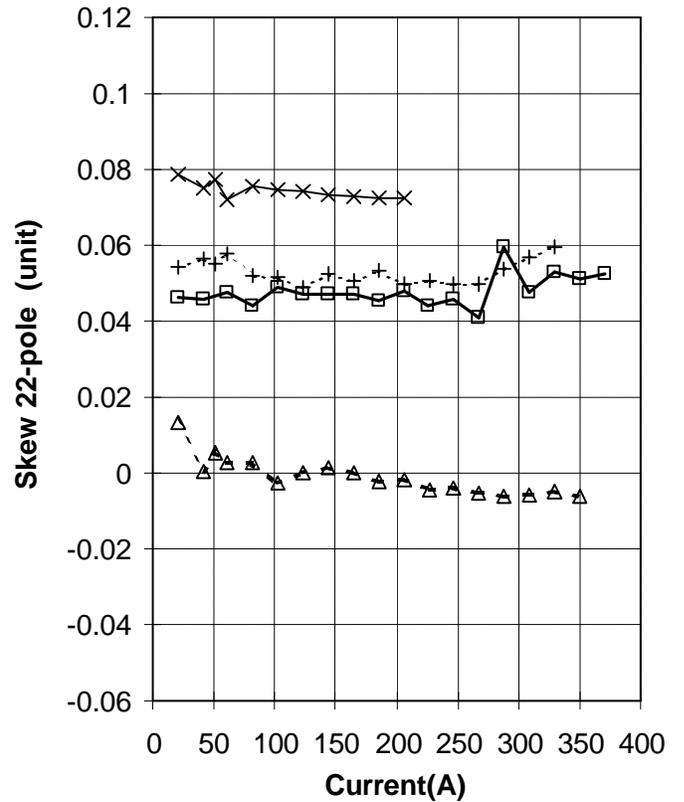
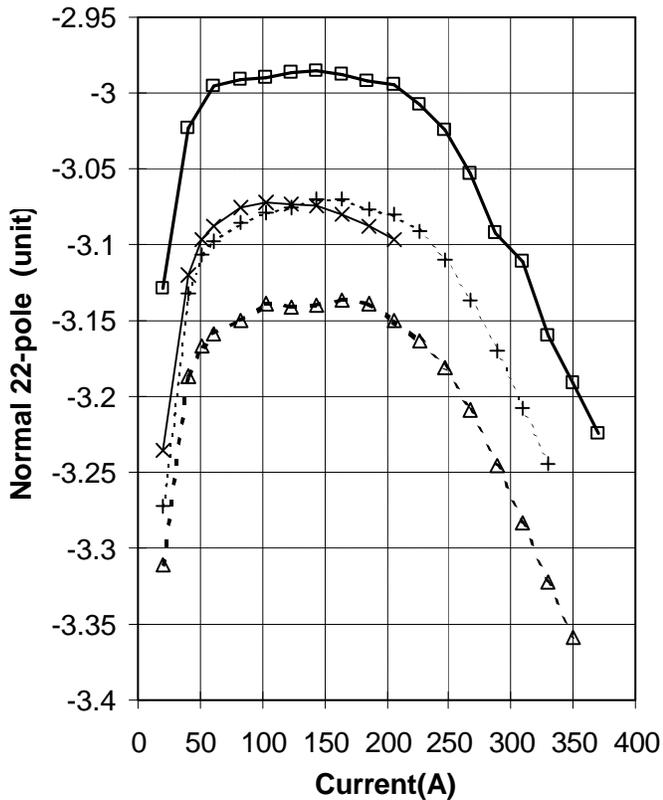
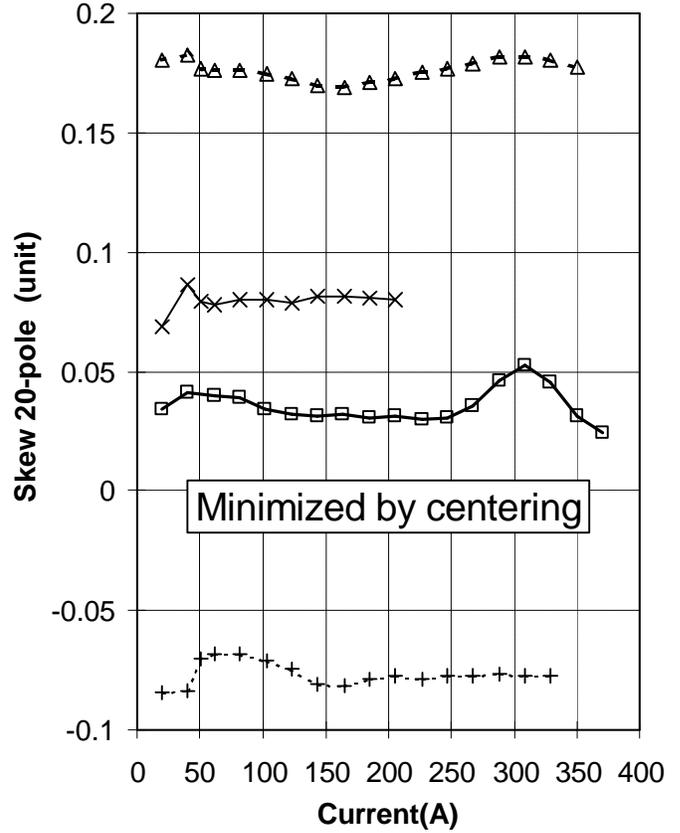
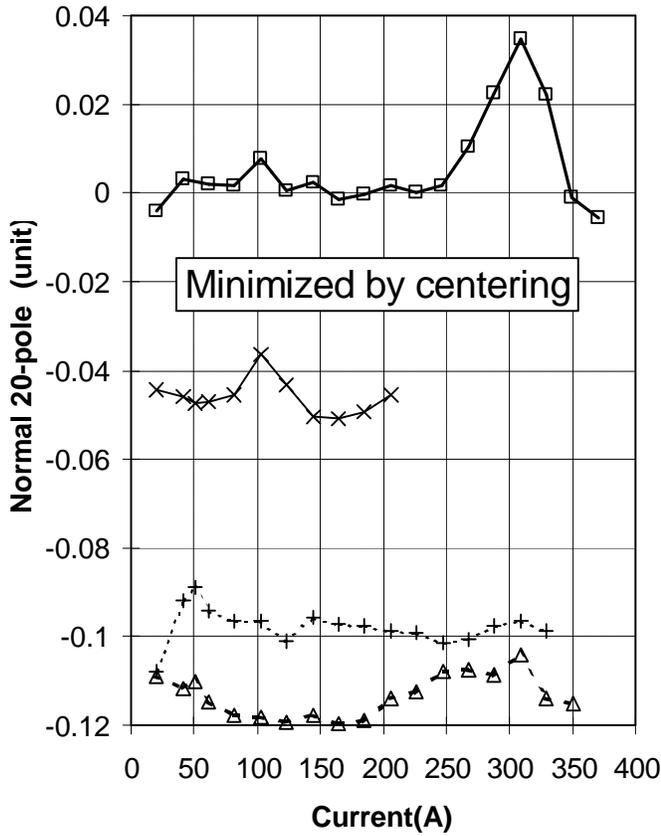
—□— HSD10153.101 UP RAMP; CENTER  
 - - Δ - - HSD10327.101 UP RAMP; CENTER

—×— HSD10241.101 UP RAMP; CENTER  
 - - + - - HSD20129.102 UP RAMP; CENTER



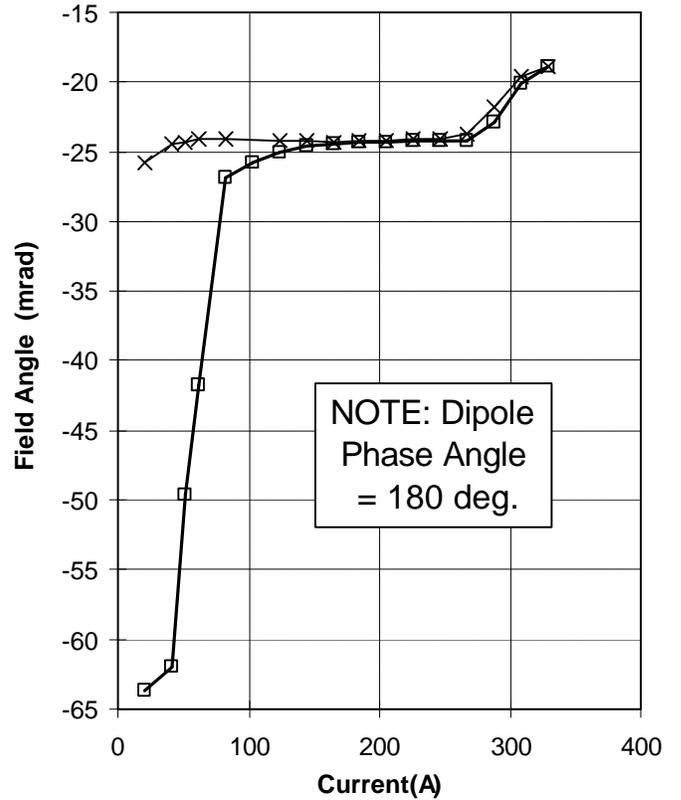
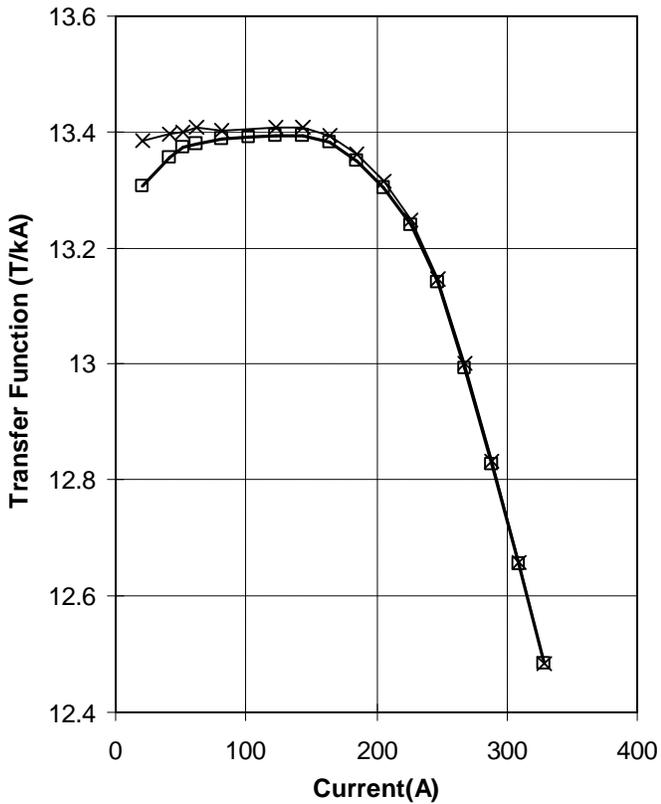
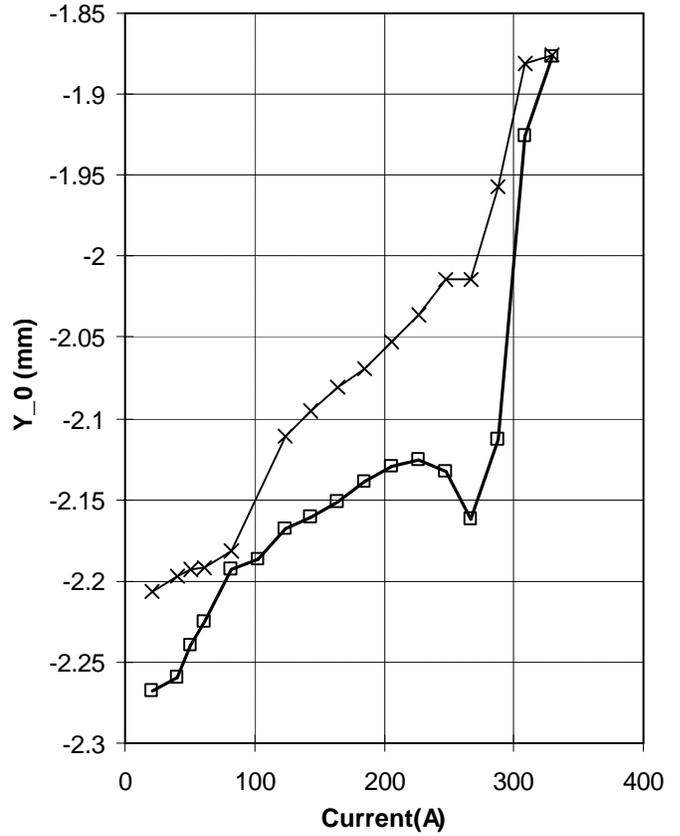
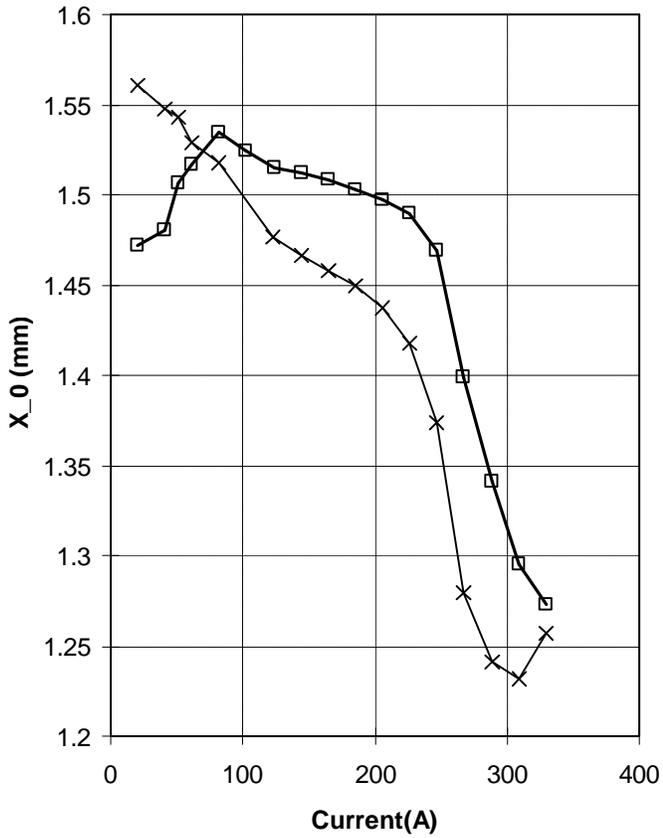
—□— HSD10153.101 UP RAMP; CENTER  
 - - Δ - - HSD10327.101 UP RAMP; CENTER

—×— HSD10241.101 UP RAMP; CENTER  
 - - + - - HSD20129.102 UP RAMP; CENTER



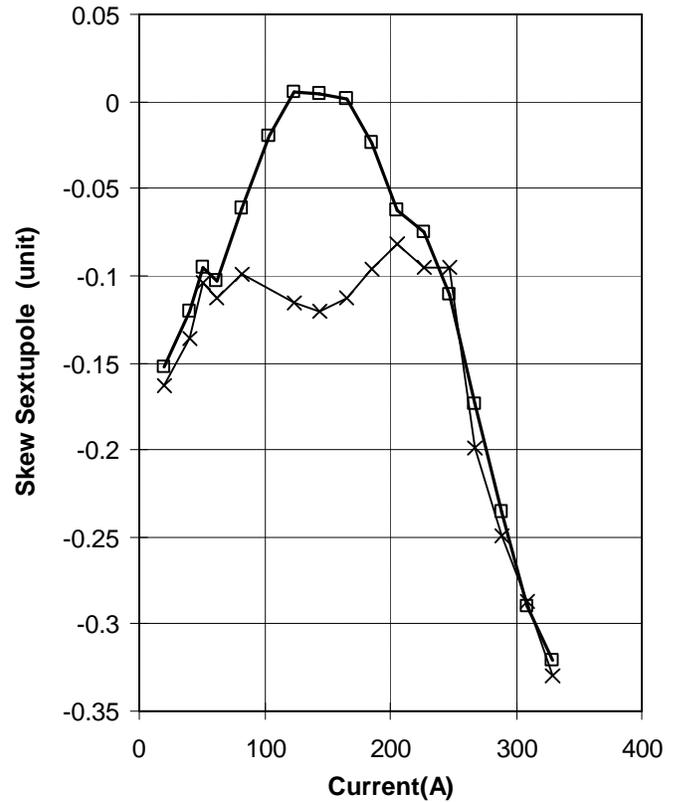
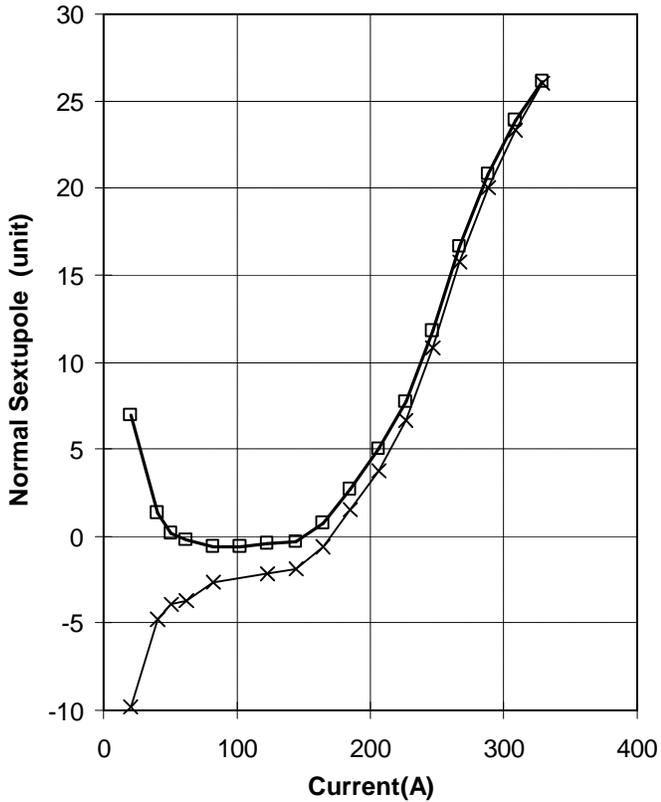
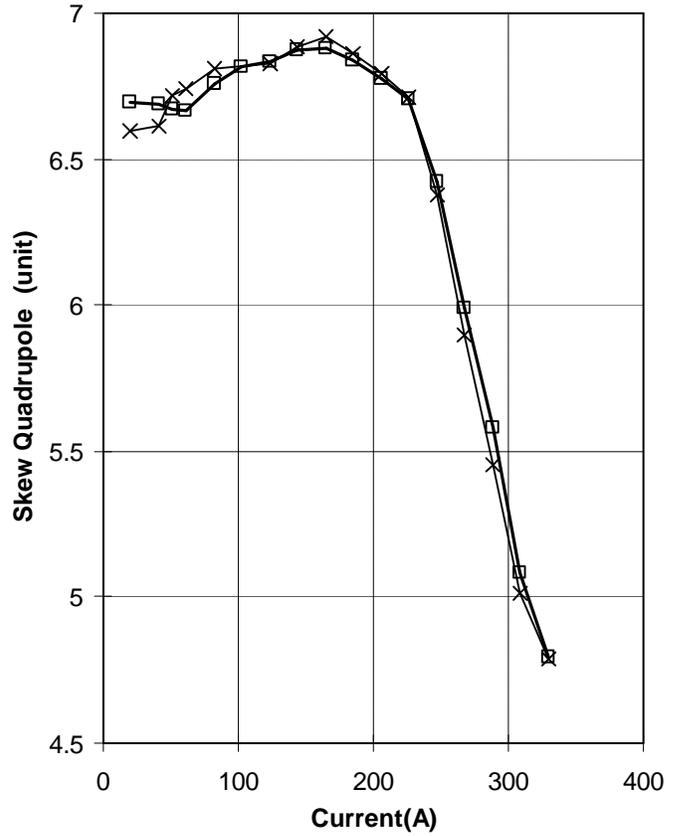
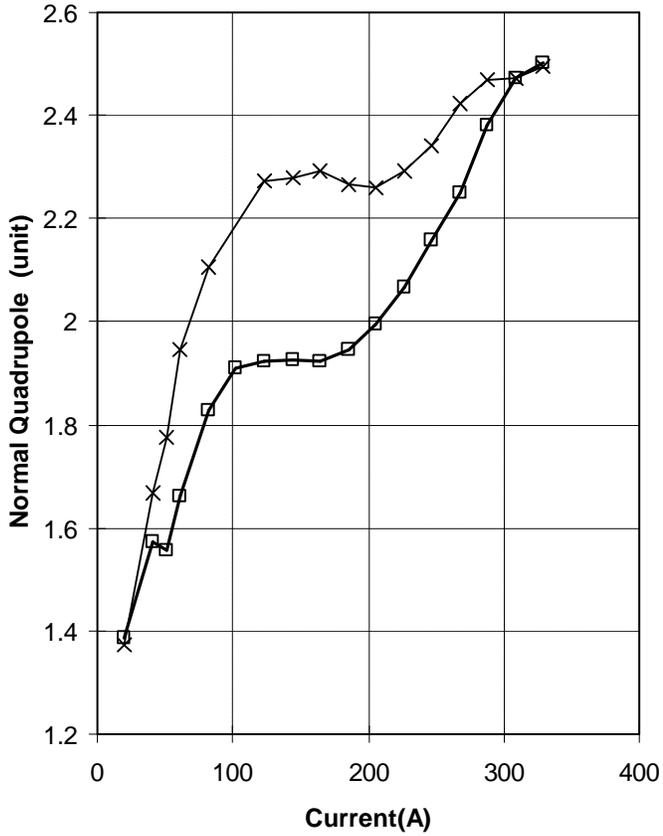
—□— HSD20129.102 DC LOOP UP RAMP

—×— HSD20130.102 DC LOOP DN RAMP



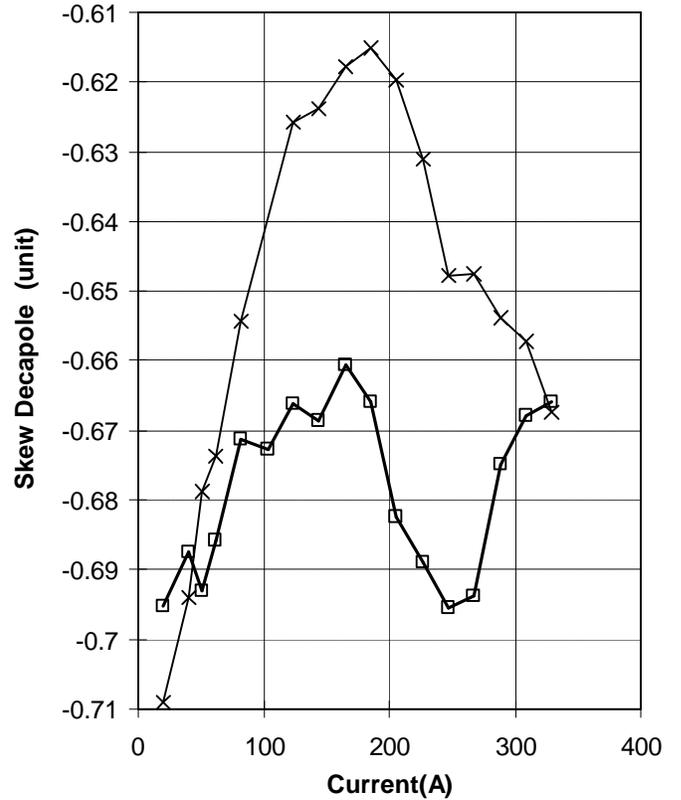
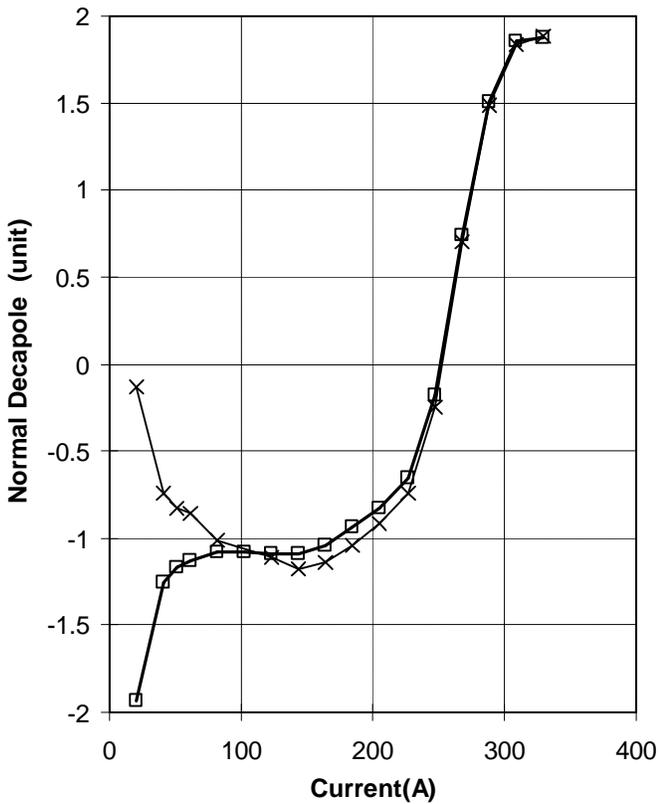
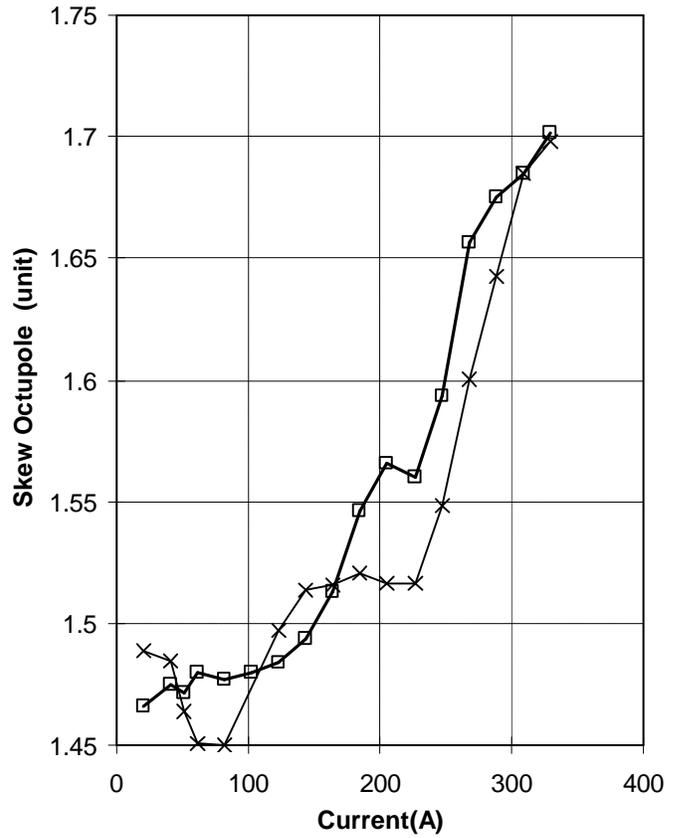
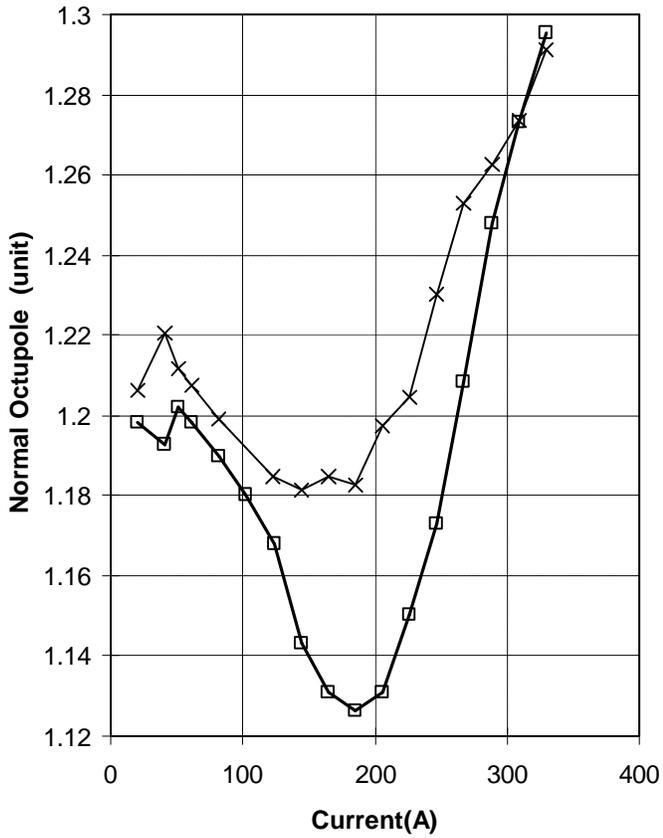
—□— HSD20129.102 DC LOOP UP RAMP

—×— HSD20130.102 DC LOOP DN RAMP



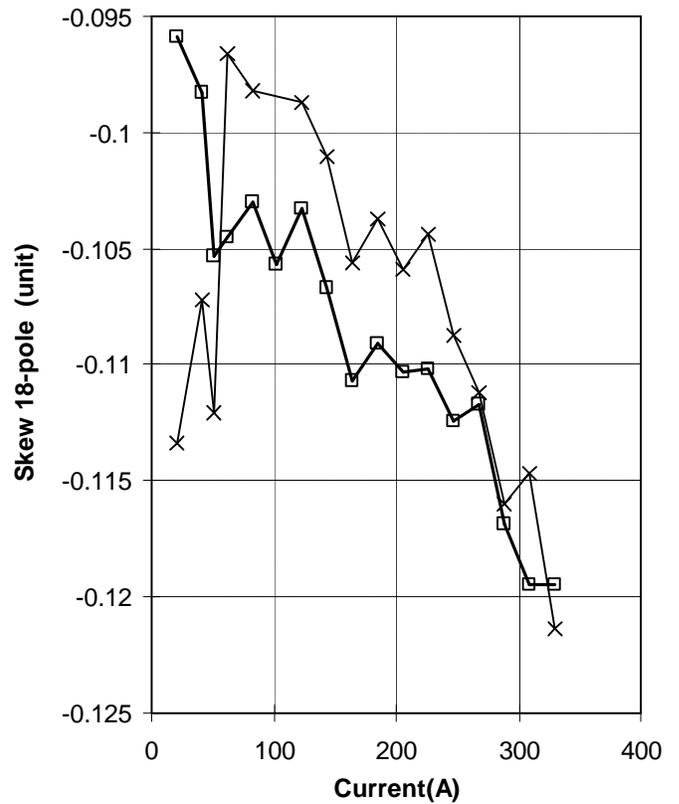
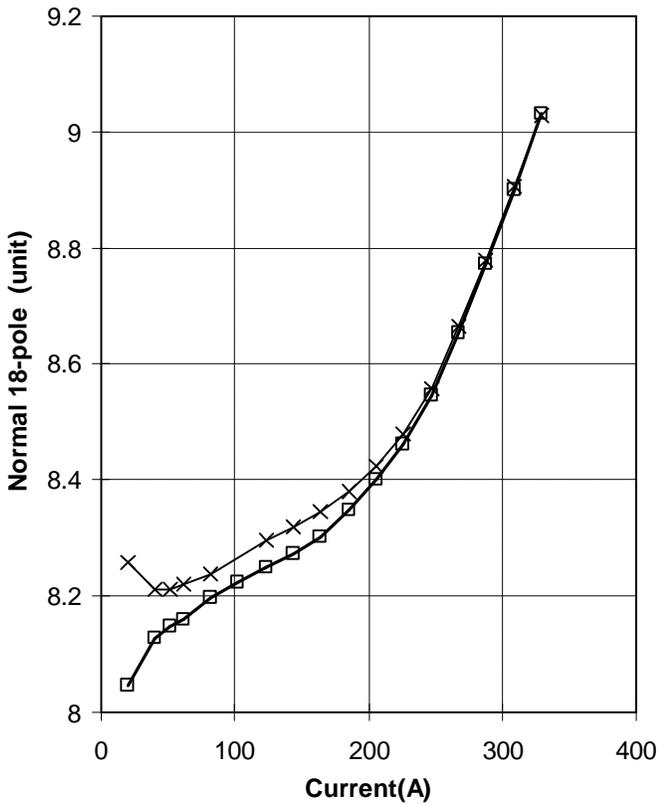
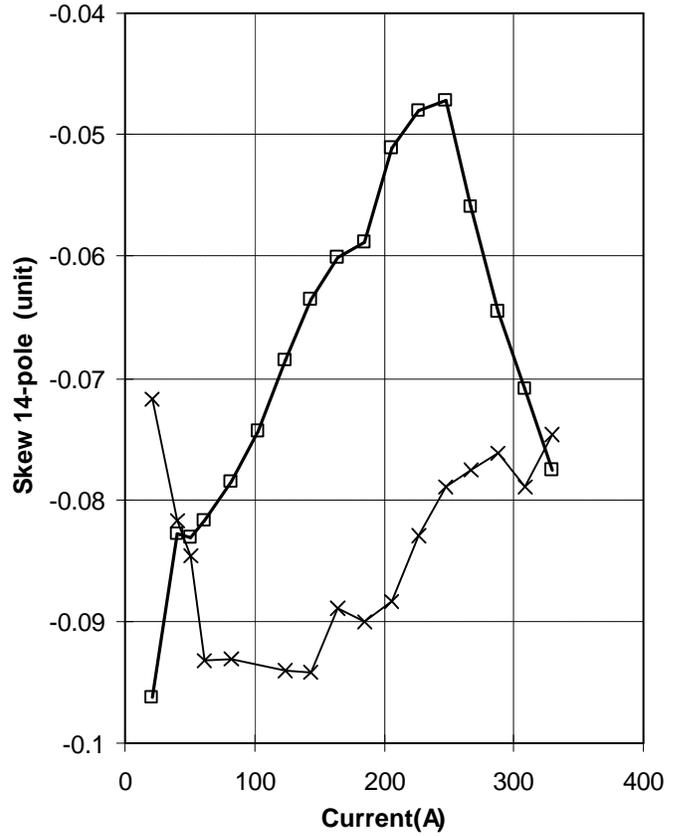
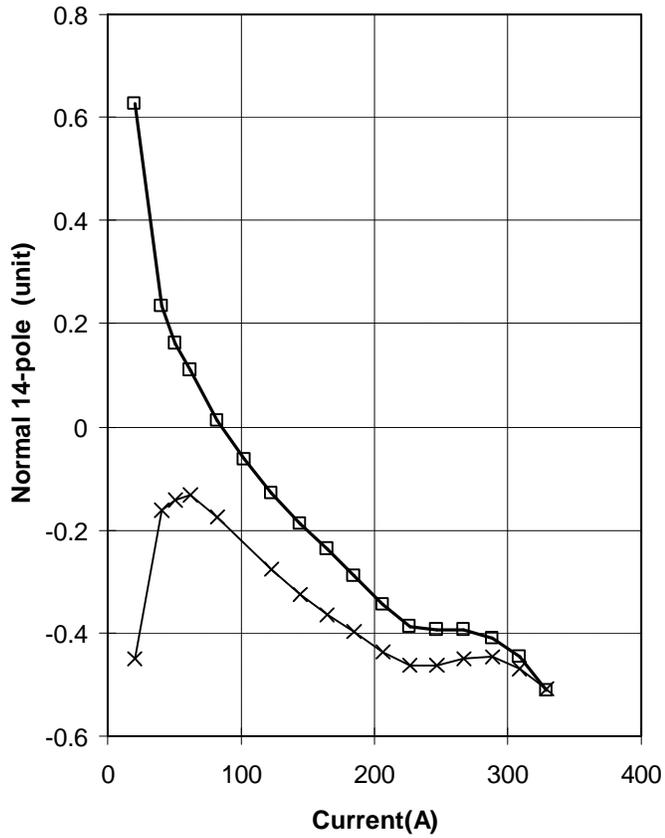
—□— HSD20129.102 DC LOOP UP RAMP

—×— HSD20130.102 DC LOOP DN RAMP



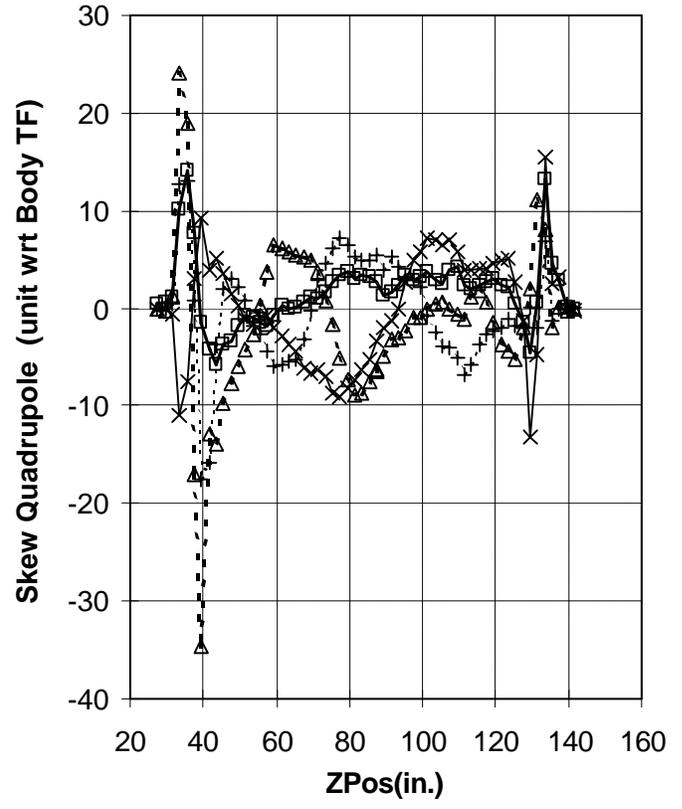
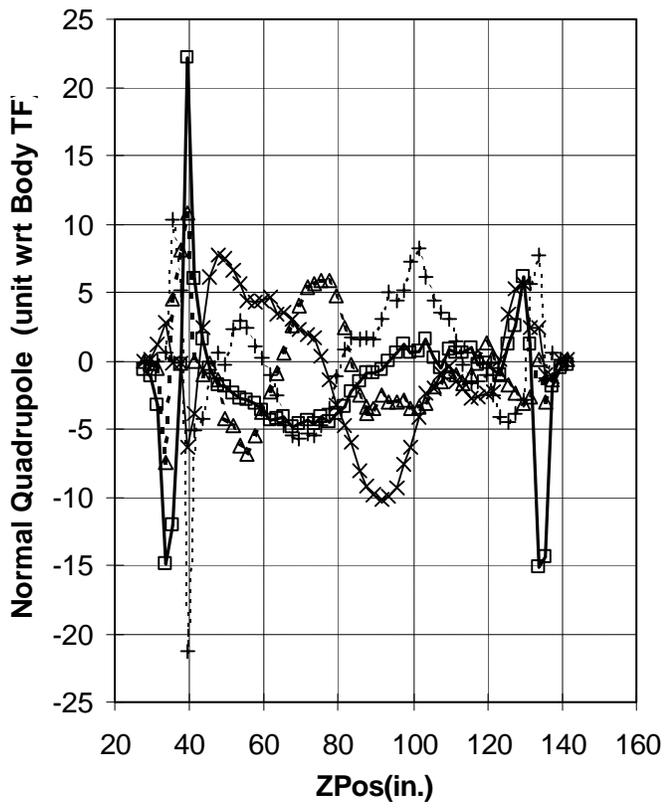
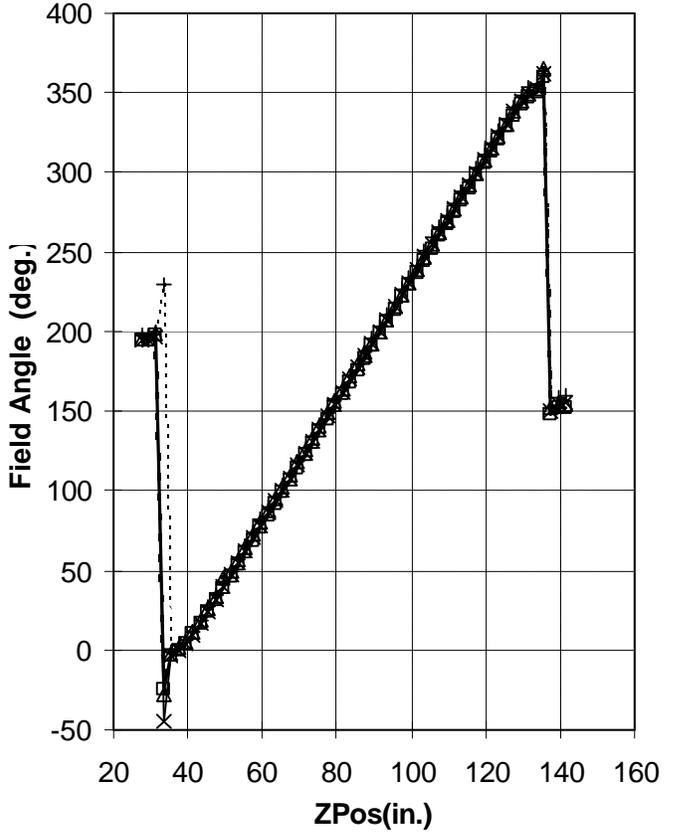
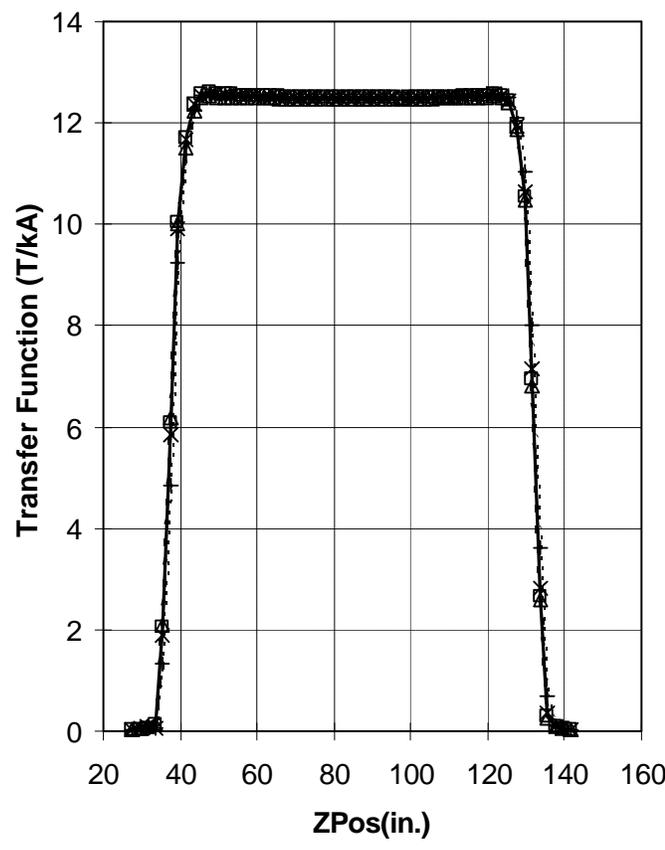
—□— HSD20129.102 DC LOOP UP RAMP

—×— HSD20130.102 DC LOOP DN RAMP



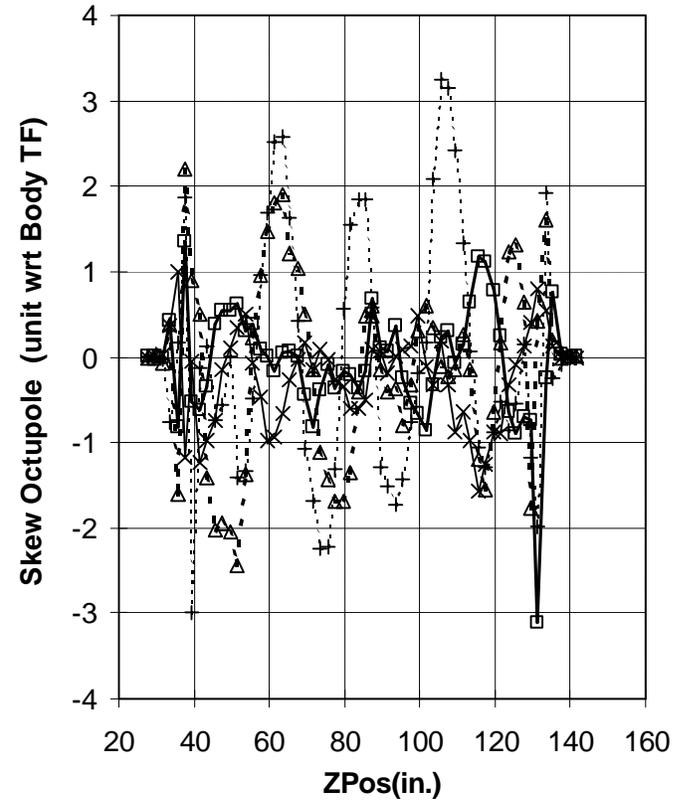
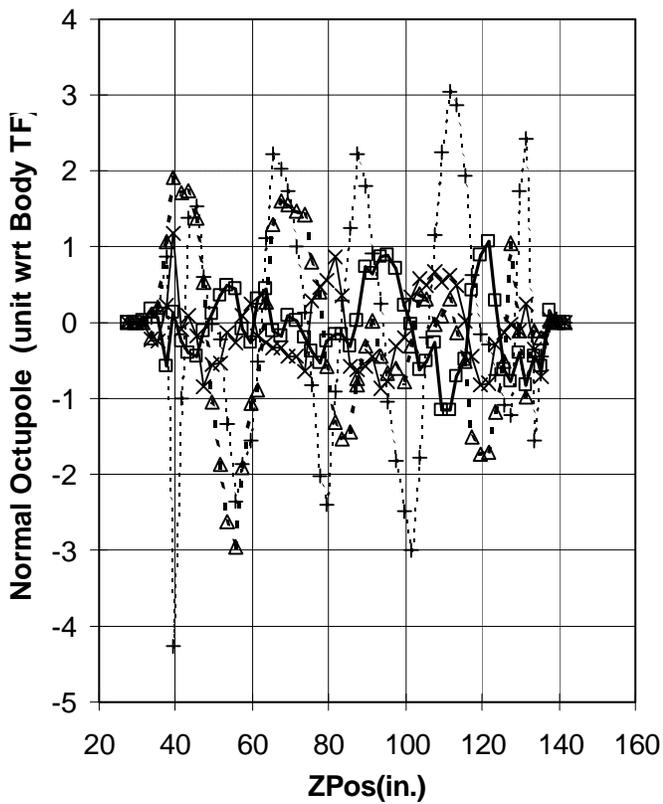
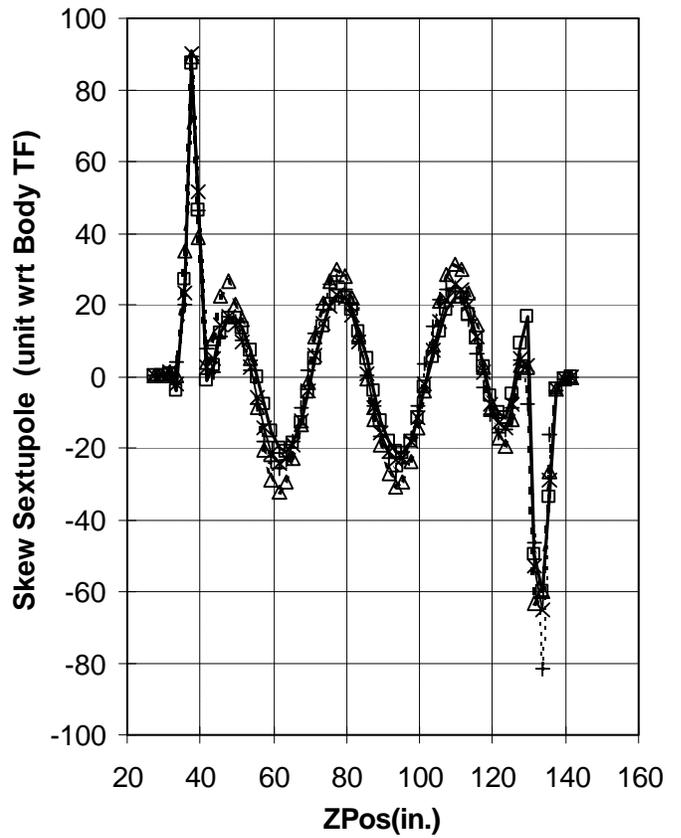
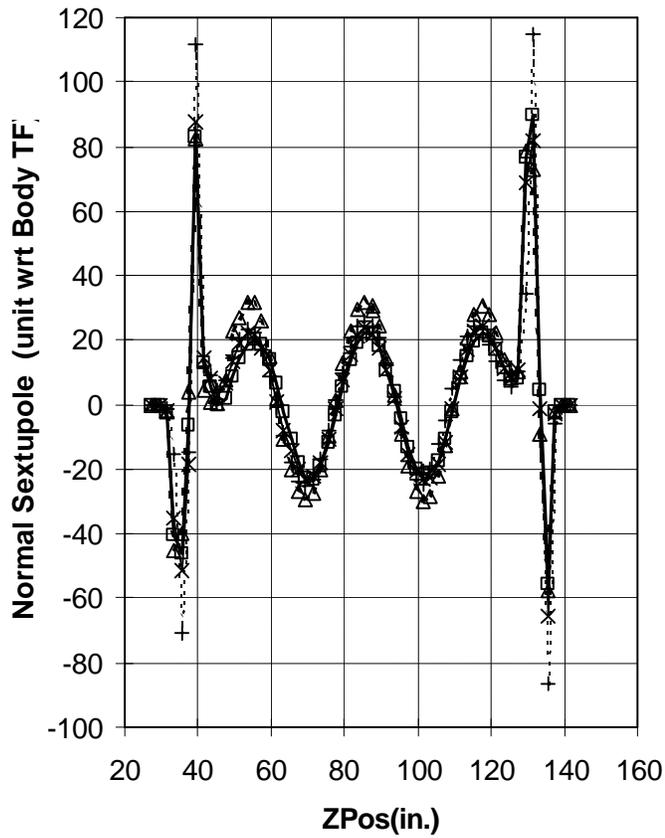
—□— HSD10160.101 ZSCAN AT 329A; FIXED FRAME  
 - - Δ - - HSD10332.101 ZSCAN AT 329A; FIXED FRAME

—×— HSD10239.101 ZSCAN AT 329A; FIXED FRAME  
 ···+··· HSD20132.101 ZSCAN AT 329A; FIXED FRAME



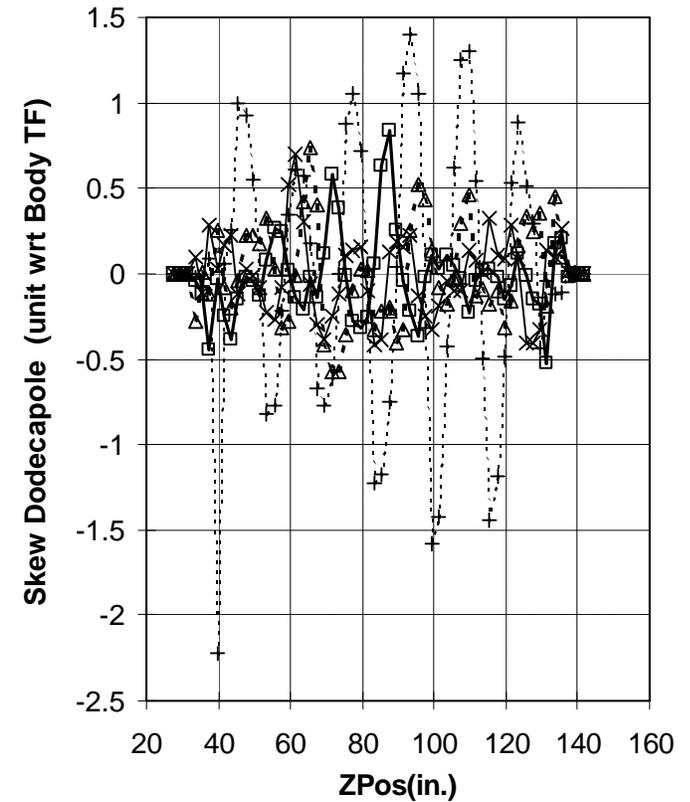
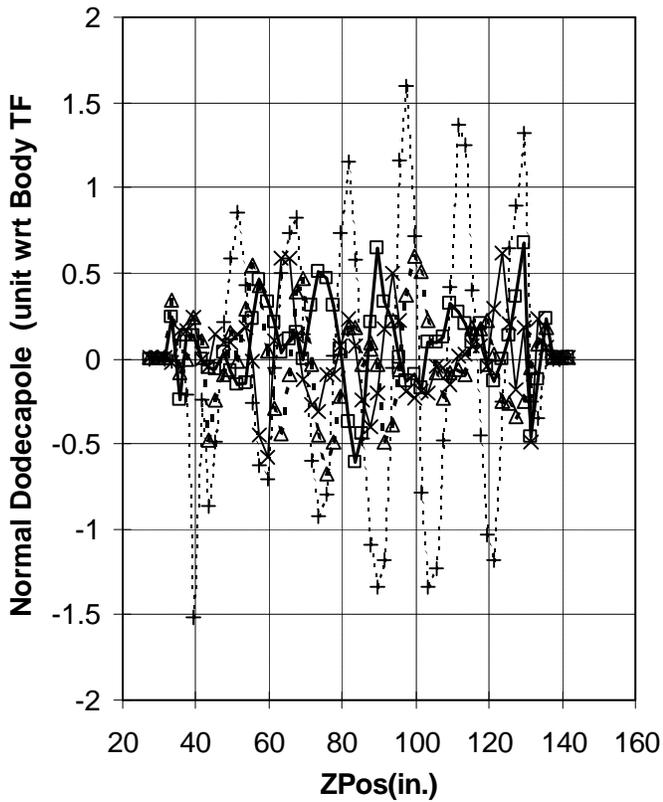
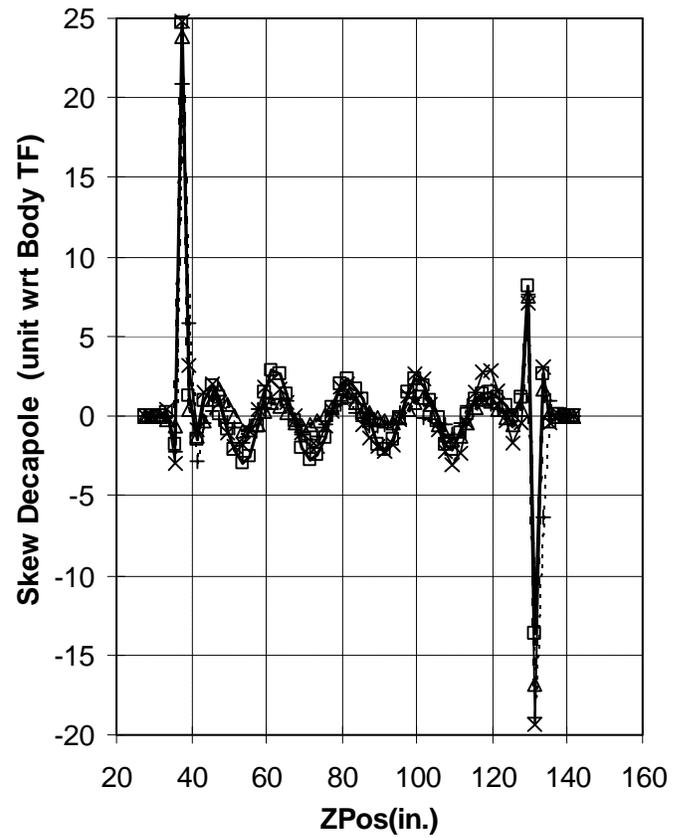
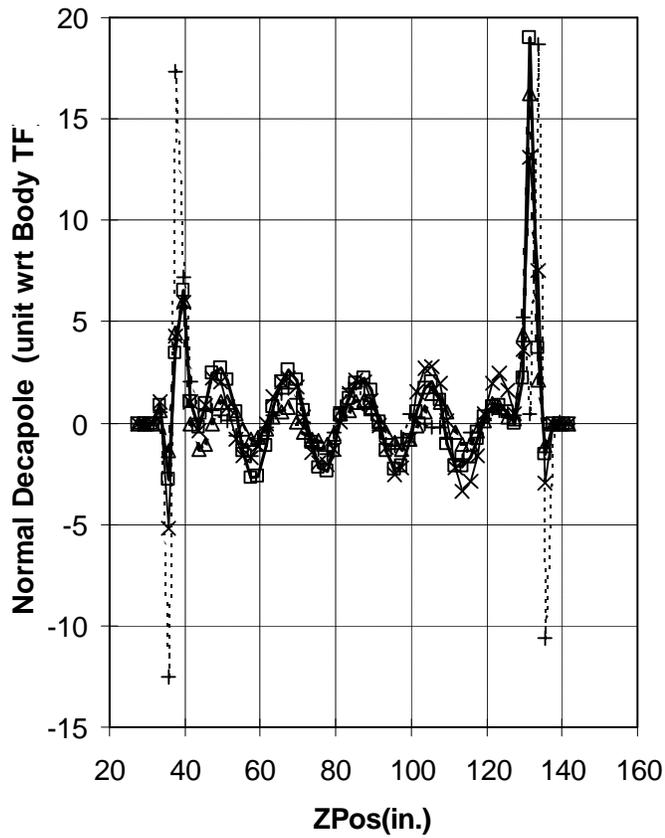
—□— HSD10160.101 ZSCAN AT 329A; FIXED FRAME  
 - - Δ - - HSD10332.101 ZSCAN AT 329A; FIXED FRAME

—×— HSD10239.101 ZSCAN AT 329A; FIXED FRAME  
 - - + - - HSD20132.101 ZSCAN AT 329A; FIXED FRAME



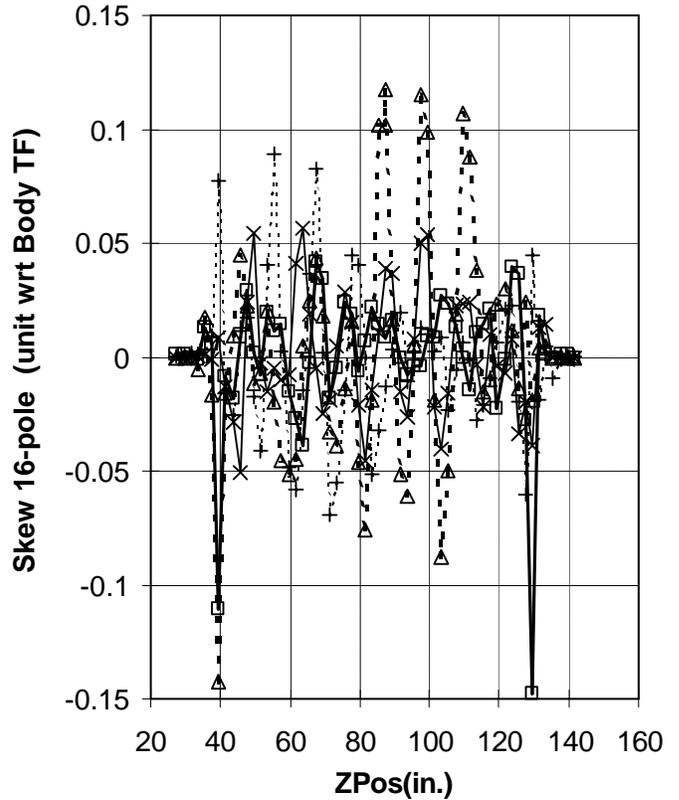
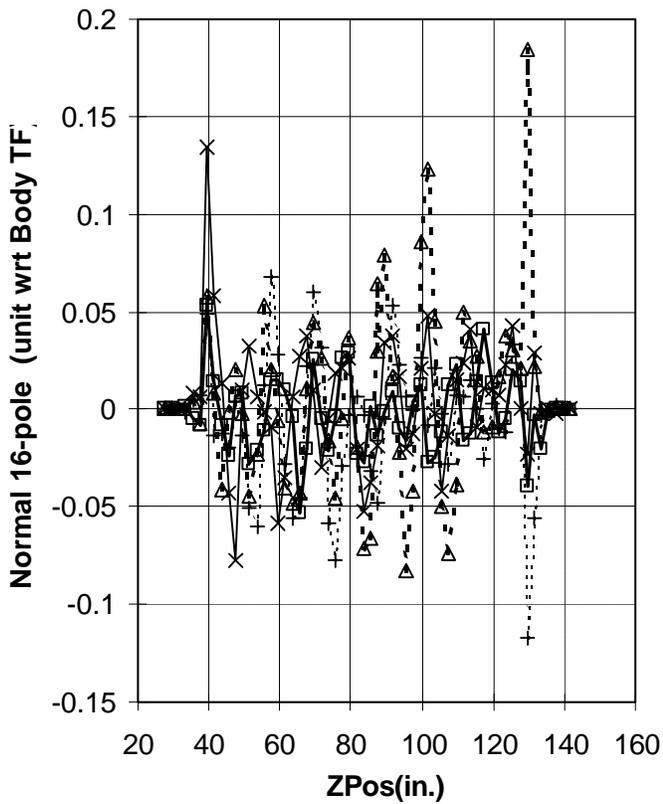
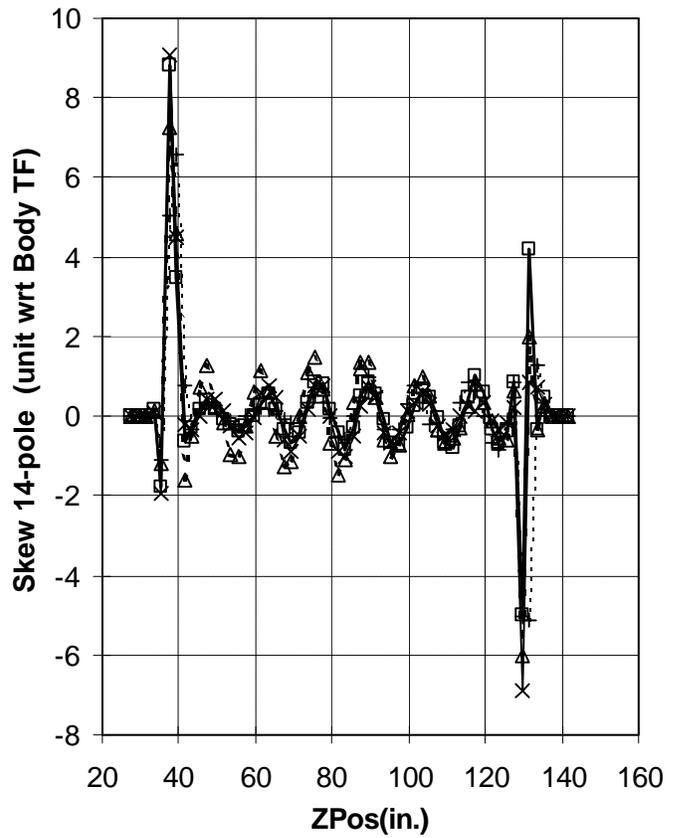
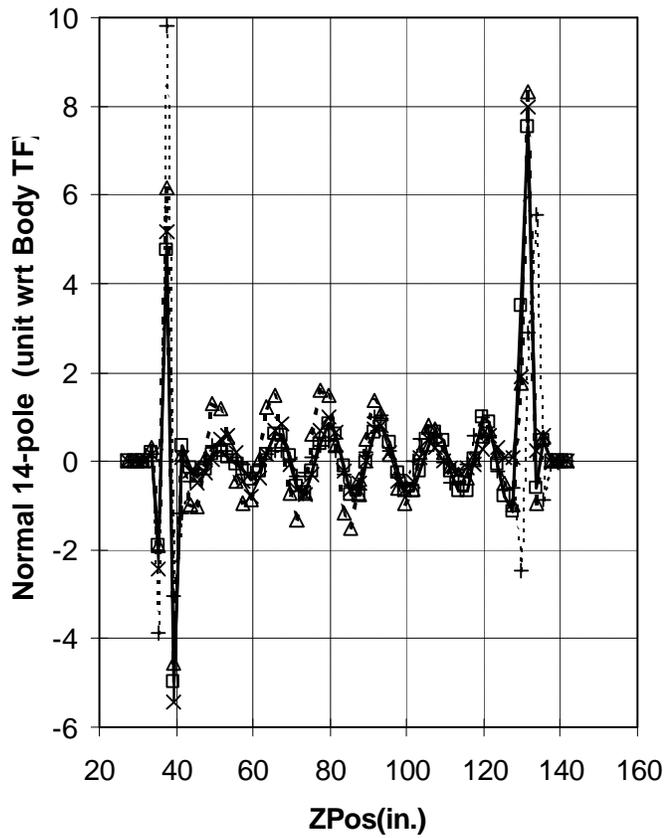
—□— HSD10160.101 ZSCAN AT 329A; FIXED FRAME  
 - - Δ - - HSD10332.101 ZSCAN AT 329A; FIXED FRAME

—×— HSD10239.101 ZSCAN AT 329A; FIXED FRAME  
 - - + - - HSD20132.101 ZSCAN AT 329A; FIXED FRAME



—□— HSD10160.101 ZSCAN AT 329A; FIXED FRAME  
 - - Δ - - HSD10332.101 ZSCAN AT 329A; FIXED FRAME

—×— HSD10239.101 ZSCAN AT 329A; FIXED FRAME  
 ···+··· HSD20132.101 ZSCAN AT 329A; FIXED FRAME



—□— HSD10160.101 ZSCAN AT 329A; FIXED FRAME  
 - - Δ - - HSD10332.101 ZSCAN AT 329A; FIXED FRAME

—×— HSD10239.101 ZSCAN AT 329A; FIXED FRAME  
 ...+... HSD20132.101 ZSCAN AT 329A; FIXED FRAME

